

SCIENCE & SOCIETY (SAS)

College of Agricultural & Environmental Sciences

SAS 002 – Feeding the World: Influences on the Global Food Supply (3 units)

Course Description: Scientific principles and dynamic interactions involved in food production, food processing, nutrition, and agribusiness. Physical, biological and social science issues influencing the availability and safety of the food supply worldwide.

Learning Activities: Lecture/Discussion 3 hour(s).

Credit Limitation(s): Not open for credit to students who have taken SAS 002V.

Grade Mode: Letter.

General Education: Science & Engineering (SE) or Social Sciences (SS); Scientific Literacy (SL).

SAS 002V – Feeding the World: Influences on the Global Food Supply (3 units)

Course Description: Scientific principles and dynamic interactions involved in food production, food processing, nutrition, and agribusiness. Physical, biological and social science issues influencing the availability and safety of the food supply worldwide.

Learning Activities: Web Virtual Lecture 2 hour(s), Web Electronic Discussion 1 hour(s).

Credit Limitation(s): Not open for credit to students who have taken SAS 002.

Grade Mode: Letter.

General Education: Science & Engineering (SE) or Social Sciences (SS); Scientific Literacy (SL).

SAS 003 – Science, Technology & Society (4 units)

Course Description: Impact of developments in science and technology on the individual in society and how economics, politics, culture and values affect technological development.

Learning Activities: Lecture 4 hour(s).

Credit Limitation(s): Not open for credit to students who have completed former ABS 018.

Grade Mode: Letter.

General Education: Science & Engineering (SE) or Social Sciences (SS).

SAS 004Y – Water In Popular Culture (3 units)

Course Description: Analysis of the social construction of modern popular culture and its handling of the environment, focusing on water, as revealed through a survey of Hollywood and independent films.

Learning Activities: Film Viewing 3 hour(s), Discussion 1 hour(s), Web Virtual Lecture 1 hour(s).

Grade Mode: Letter.

General Education: Science & Engineering (SE) or Social Sciences (SS); American Cultures, Governance, & History (ACGH); Scientific Literacy (SL); World Cultures (WC).

SAS 005 – Pathways to Discovery: Science & Society (3 units)

Course Description: 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. Topics vary.

Learning Activities: Lecture/Discussion 3 hour(s).

Repeat Credit: May be repeated 2 time(s).

Grade Mode: Letter.

General Education: Science & Engineering (SE) or Social Sciences (SS).

SAS 006A – Introduction to Career Discovery Groups (1 unit)

Course Description: Overview of campus resources for career exploration and professional development. Intended for first-year students in the College of Agricultural & Environmental Sciences.

Prerequisite(s): Consent of instructor.

Learning Activities: Discussion 1 hour(s).

Enrollment Restriction(s): Open to students entering College of Agricultural & Environmental Sciences in their first year of college only.

Grade Mode: Pass/No Pass only.

SAS 006B – Career Discovery Seminar (3 units)

Course Description: Overview of skills needed to find and secure career opportunities, including job searches, professional communication, participation in informational and job interviews as both interviewer and interviewee, preparation of resumes and cover letters. Exploration of diverse career options.

Prerequisite(s): SAS 006A; and consent of instructor.

Learning Activities: Lecture 1.50 hour(s), Discussion 1.50 hour(s).

Grade Mode: Letter.

General Education: Social Sciences (SS).

SAS 006C – Career Discovery in the Field (1 unit)

Course Description: Exploration of prospective careers through visits to businesses, institutions, and agencies and discussions with professionals who work there.

Prerequisite(s): SAS 006B.

Learning Activities: Fieldwork 2 hour(s).

Grade Mode: Pass/No Pass only.

SAS 008 – Water Quality at Risk (3 units)

Course Description: Natural and human threats 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.

Learning Activities: Lecture 2 hour(s), Discussion 1 hour(s).

Enrollment Restriction(s): Not open to students who have successfully completed ERS 008. (Formerly ERS 008.)

Cross Listing: ESM 008.

Grade Mode: Letter.

General Education: Science & Engineering (SE) or Social Sciences (SS); Scientific Literacy (SL); Writing Experience (WE).

SAS 009 – Crisis in the Environment (4 units)

Course Description: Exploration of contemporary environmental issues, including causes, effects, and solutions to a wide range of environmental problems facing the global ecosystem. Political, societal, and economic dimensions of these issues. Topics covered include climate change, air pollution, ocean exploitation, forest management and wildfire, and food and water insecurity.

Learning Activities: Lecture 3 hour(s), Discussion 1 hour(s).

Grade Mode: Letter.

General Education: Science & Engineering (SE) or Social Sciences (SS); Writing Experience (WE).

SAS 010 – Water, Power, Society (3 units)

Course Description: Water resources issues. How water has been used to gain and wield socio-political power. Water resources development in California related to current and future sustainability of water quantity and quality. Roles of science and policy in solving water problems.

Learning Activities: Lecture 2 hour(s), Discussion 1 hour(s).

Cross Listing: HYD 010.

Grade Mode: Letter.

General Education: Science & Engineering (SE) or Social Sciences (SS); Scientific Literacy (SL).

SAS 012 – Plants & Society (4 units)

Course Description: Dependence of human societies on plant and plant products. Plants as resources for food, fiber, health, enjoyment and environmental services. Sustainable uses of plants for food production, raw materials, bioenergy, and environmental conservation. Global population growth and future food supplies.

Prerequisite(s): High school biology.

Learning Activities: Lecture 3 hour(s), Extensive Writing 3 hour(s).

Credit Limitation(s): Not open for credit to students who have completed PLB 012. (Former PLB 012.)

Cross Listing: PLS 012.

Grade Mode: Letter.

General Education: Science & Engineering (SE) or Social Sciences (SS); Writing Experience (WE).

SAS 013 – Disease & Society (3 units)

Course Description: 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.

Learning Activities: Lecture 3 hour(s).

Enrollment Restriction(s): Limited enrollment.

Grade Mode: Letter.

General Education: Science & Engineering (SE) or Social Sciences (SS); Scientific Literacy (SL).

SAS 014 – Forests & Society (3 units)

Course Description: Sociology, natural history and current issues of the world's forests. Application of scientific principles in outdoor laboratories and on-campus field trips.

Learning Activities: Lecture 2 hour(s), Discussion 1 hour(s).

Enrollment Restriction(s): Limited to 120 students.

Grade Mode: Letter.

General Education: Science & Engineering (SE) or Social Sciences (SS); American Cultures, Governance, & History (ACGH); Oral Skills (OL); Scientific Literacy (SL); Writing Experience (WE).

SAS 015Y – Extraterrestrial Soils (4 units)

Course Description: Introduction to the field of soil science and associated societal issues through an extraterrestrial lens. Importance of soils in the planetary and space sciences. Current societal challenges related to extraterrestrial soils with a specific emphasis on in situ resource utilization and planetary protection.

Learning Activities: Web Virtual Lecture 2 hour(s), Laboratory 3 hour(s), Project.

Grade Mode: Letter.

General Education: Science & Engineering (SE) or Social Sciences (SS); Writing Experience (WE).

SAS 016 – Soil, Water, & Civilizations (3 units)

Course Description: Exploring past civilizations and examining how management of soil, water, and natural resources allowed them to flourish, decline, or perhaps fail. Important issues include agricultural practices, deforestation, water quality, and land management.

Learning Activities: Lecture 3 hour(s).

Grade Mode: Letter.

General Education: Science & Engineering (SE) or Social Sciences (SS); Scientific Literacy (SL).

SAS 018 – GIS & Society (3 units)

Course Description: Geographic Information Systems (GIS) as a spatial technology 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.

Learning Activities: Lecture 2 hour(s), Laboratory 3 hour(s), Term Paper/Discussion 0.30 hour(s).

Grade Mode: Letter.

General Education: Science & Engineering (SE) or Social Sciences (SS); Quantitative Literacy (QL); Scientific Literacy (SL); Visual Literacy (VL).

SAS 020 – Genetics & Society (4 units)

Course Description: Basic concepts of genetics, modern methods of biotechnology, the process of scientific discovery and the public perception of the process; present and future impact of genetics on society.

Learning Activities: Lecture 3 hour(s), Discussion 1 hour(s).

Credit Limitation(s): Not open for credit to students who have completed SAS 140.

Grade Mode: Letter.

General Education: Science & Engineering (SE) or Social Sciences (SS); Oral Skills (OL); Scientific Literacy (SL); Writing Experience (WE).

SAS 025 – Global Climate Change: Convergence of Biological, Geophysical, & Social Sciences (4 units)

Course Description: Causes of global climate change and the biological, geophysical, and social consequences of such change. Methods used by different scientists for predicting future events. Complexity of global affairs. Decision making under uncertainty.

Learning Activities: Lecture 2 hour(s), Discussion 1 hour(s), Tutorial 1 hour(s).

Credit Limitation(s): Students cannot take both SAS 025 & SAS 025V for credit.

Grade Mode: Letter.

General Education: Science & Engineering (SE) or Social Sciences (SS); Oral Skills (OL); Quantitative Literacy (QL); Scientific Literacy (SL); Visual Literacy (VL); Writing Experience (WE).

SAS 025V – Global Climate Change: Convergence of Biological, Geophysical, & Social Sciences (4 units)

Course Description: Causes of global climate change and the biological, geophysical, and social consequences of such change. Methods used by different scientists for predicting future events. Complexity of global affairs. Decision making under uncertainty.

Learning Activities: Web Virtual Lecture 2 hour(s), Web Electronic Discussion 1 hour(s), Auto Tutorial 1 hour(s).

Credit Limitation(s): Students cannot take both SAS 025 & SAS 025V for credit.

Grade Mode: Letter.

General Education: Science & Engineering (SE) or Social Sciences (SS); Oral Skills (OL); Quantitative Literacy (QL); Scientific Literacy (SL); Visual Literacy (VL); Writing Experience (WE).

SAS 030 – Mushrooms, Molds, & Society (3 units)

Course Description: 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.

Learning Activities: Lecture/Discussion 3 hour(s).

Grade Mode: Letter.

General Education: Science & Engineering (SE) or Social Sciences (SS).

SAS 035 – Germs: The Good, the Bad, & the Ugly (3 units)

Course Description: Impact of microorganisms on Earth, Humans and Society. Historical, scientific, and contemporary issues dealing with microbes on natural and built environments.

Learning Activities: Lecture 2 hour(s), Discussion 1 hour(s).

Enrollment Restriction(s): Limited to 60 students.

Grade Mode: Letter.

General Education: Science & Engineering (SE) or Social Sciences (SS); Writing Experience (WE).

SAS 040 – Photography: Bridging Art & Science (3 units)

Course Description: 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. Camera required.

Learning Activities: Lecture 2 hour(s), Studio 3 hour(s).

Grade Mode: Letter.

General Education: Arts & Humanities (AH) or Science & Engineering (SE); Scientific Literacy (SL); Visual Literacy (VL); Writing Experience (WE).

SAS 041 – Understanding Performance: Appreciation of Modern Theatre, Dance, Film & Performance Art (4 units)

Course Description: Relevance of theatre and performance to modern culture, science and society. Approaches to theatre/dance/media/performance art, integrated into Mondavi Centre for the Arts and Theatre and Dance Department programs.

Learning Activities: Lecture/Discussion 3 hour(s), Discussion/Laboratory 1 hour(s).

Cross Listing: DRA 005.

Grade Mode: Letter.

General Education: Arts & Humanities (AH); Domestic Diversity (DD); Oral Skills (OL); Visual Literacy (VL); World Cultures (WC); Writing Experience (WE).

SAS 042 – Earth, Water, Science, Song (3 units)

Course Description: Fusion of water and soil science with performing arts. Creative communication of scientific concepts and facts through exercises in song writing and poetry. Design, discuss and conduct public performances related to the functioning of the natural world.

Learning Activities: Lecture 2 hour(s), Studio 3 hour(s).

Grade Mode: Letter.

General Education: Arts & Humanities (AH) or Science & Engineering (SE); Oral Skills (OL).

SAS 043 – Energy, Materials, & Design Over Time (4 units)

Course Description: Global history of design across time, viewed through the lens of the effects of the creation and discovery of new energy sources, processes, and materials on design.

Learning Activities: Lecture 3 hour(s), Discussion 1 hour(s).

Cross Listing: DES 040A.

Grade Mode: Letter.

General Education: Arts & Humanities (AH); World Cultures (WC).

SAS 070A – Genetic Engineering in Medicine, Agriculture, & Law (5 units)

This version has ended; see updated course, below.

Course Description: Historical and scientific study of the impact of genetic engineering in medicine, agriculture, and law, including examination of social, ethical, and legal issues raised. Offered in a distance-learning format.

Learning Activities: Lecture 5 hour(s).

Enrollment Restriction(s): Not open to students who have completed BIS 002A, BIS 002B, BIS 002C.

Grade Mode: Letter.

General Education: Science & Engineering (SE) or Social Sciences (SS); Scientific Literacy (SL).

SAS 070A – Genetic Engineering in Medicine, Agriculture, & Law (7 units)

Course Description: Historical and scientific study of the impact of genetic engineering in medicine, agriculture, and law, including examination of social, ethical, and legal issues raised. Offered in a distance-learning format.

Learning Activities: Lecture 5 hour(s), Discussion 2 hour(s).

Credit Limitation(s): Not open to students who have completed all three of BIS 002A, BIS 002B, BIS 002C.

Grade Mode: Letter.

General Education: Science & Engineering (SE) or Social Sciences (SS); Scientific Literacy (SL).

This course version is effective from, and including: Winter Quarter 2025.

SAS 070AV – Genetic Engineering in Medicine, Agriculture, & Law (7 units)

Course Description: Historical and scientific study of the impact of genetic engineering in medicine, agriculture, and law, including examination of social, ethical, and legal issues raised. Offered in a distance-learning format.

Learning Activities: Web Virtual Lecture 5 hour(s), Web Electronic Discussion 2 hour(s).

Enrollment Restriction(s): Not open to students who have completed all three of BIS 002A, BIS 002B, BIS 002C.

Grade Mode: Letter.

General Education: Science & Engineering (SE) or Social Sciences (SS); Scientific Literacy (SL).

SAS 090A – Issues in Environmental & Resource Sciences (2 units)

Course Description: Discussion of historical and current issues in environmental and resource sciences. Lectures, reading and field trips will provide background for selected topics.

Prerequisite(s): Limited to lower division students.

Learning Activities: Seminar 2 hour(s).

Grade Mode: Letter.

SAS 090B – Observing & Writing in Biology (2 units)

Course Description: Observe the interactions between microscopic organisms, conduct simple laboratory experiments, describe and analyze observations and discuss scientific observations and writing.

Learning Activities: Seminar 1 hour(s), Laboratory 1 hour(s), Term Paper.

Grade Mode: Letter.

SAS 090E – Biotechnology-a New Era, a New Struggle (2 units)

Course Description: 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.

Learning Activities: Seminar 2 hour(s).

Grade Mode: Letter.

SAS 090F – Food Distribution in a Hungry World (2 units)

Course Description: The biological, technological, environmental, and socioeconomic factors related to food distribution systems at local, regional, national, and international levels. The potential for increasing world food supply by reducing losses between harvest and consumption.

Learning Activities: Seminar 2 hour(s).

Enrollment Restriction(s): Limited to 15 students.

Grade Mode: Letter.

SAS 090G – Science, Society & the Environment (2 units)

Course Description: Contemporary environmental issues, scientific approaches to addressing these issues, and accompanying societal and ethical considerations.

Learning Activities: Seminar 2 hour(s).

Grade Mode: Letter.

SAS 090X – Lower Division Seminar (1-4 units)

Course Description: Examination of a special topic in Science & Society through shared readings, discussions, written assignments, or special activities such as fieldwork, laboratory work, etc.

Prerequisite(s): Consent of instructor; lower division standing.

Learning Activities: Seminar 1-4 hour(s).

Enrollment Restriction(s): Limited enrollment.

Repeat Credit: May be repeated.

Grade Mode: Letter.

SAS 092 – Internship in Science & Society (1-12 units)

Course Description: Supervised internship on and off campus, in the community, or in institutional settings.

Prerequisite(s): Consent of instructor; lower division standing.

Learning Activities: Internship 3-36 hour(s).

Grade Mode: Pass/No Pass only.

SAS 097T – Tutoring in Science & Society (2-3 units)

Course Description: Tutoring in undergraduate Science & 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 communication and interaction.

Prerequisite(s): Consent of instructor. Lower division standing; completion of course being tutored.

Learning Activities: Discussion/Laboratory 6-9 hour(s).

Repeat Credit: May be repeated.

Grade Mode: Pass/No Pass only.

SAS 098 – Directed Group Study (1-5 units)

Course Description: Directed group study.

Prerequisite(s): Consent of instructor.

Learning Activities: Variable.

Grade Mode: Pass/No Pass only.

SAS 099 – Special Study for Undergraduates (1-5 units)

Course Description: Special study for undergraduates.

Prerequisite(s): Consent of instructor; lower division standing.

Learning Activities: Discussion 3-15 hour(s).

Grade Mode: Pass/No Pass only.

SAS 106 – Career Discovery Groups for Transfer Students (1 unit)

Course Description: Campus resources for career exploration and professional development. Skills needed to find and secure career opportunities, including job searches, professional communication, interviews, and preparation of resumes and cover letters. Intended for transfer students.

Prerequisite(s): Consent of instructor.

Learning Activities: Discussion 1.50 hour(s).

Enrollment Restriction(s): Open to transfer students entering the College of Agricultural and Environmental Sciences only.

Grade Mode: Pass/No Pass only.

SAS 109 – Environmental Change, Disease & Public Health (4 units)

Course Description: Analysis of environmental changes from pre-history to the present and their influence on disease distribution, virulence and public health. Focus on critical study of many human-driven environmental changes and the accelerated transformation/spread of pathogens under globalization.

Learning Activities: Lecture/Discussion 3 hour(s), Project.

Credit Limitation(s): Not open for credit to students who have taken HIS 109B.

Cross Listing: HIS 109.

Grade Mode: Letter.

General Education: Science & Engineering (SE) or Social Sciences (SS); Scientific Literacy (SL); World Cultures (WC).

SAS 110 – Applications of Evolution in Medicine, Human Behavior, & Agriculture (4 units)

Course Description: 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.

Prerequisite(s): BIS 002A; BIS 002B; BIS 002C.

Learning Activities: Lecture 2 hour(s), Discussion 1 hour(s), Term Paper.

Enrollment Restriction(s): Limited to 60 students.

Grade Mode: Letter.

General Education: Science & Engineering (SE); Scientific Literacy (SL); Writing Experience (WE).

SAS 120 – Science & Contemporary Societal Issues (3 units)

Course Description: 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. Topics will vary.

Prerequisite(s): Upper division standing.

Learning Activities: Lecture/Discussion 3 hour(s).

Repeat Credit: May be repeated 1 time(s).

Grade Mode: Letter.

General Education: Science & Engineering (SE) or Social Sciences (SS).

SAS 121 – Global Poverty: Critical Thinking & Taking Action (4 units)

Course Description: Social science and engineering analysis of causes and effects of world poverty and of policies to reduce it via economic growth, foreign aid, and community-level interventions; e.g., in potable water, sanitation, lighting, small scale energy, irrigation, health and microfinance.

Learning Activities: Lecture 3 hour(s), Discussion 1 hour(s).

Grade Mode: Letter.

General Education: Social Sciences (SS); World Cultures (WC).

SAS 130 – Contemporary Leadership (4 units)

Course Description: 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.

Prerequisite(s): Consent of instructor.

Learning Activities: Lecture 3 hour(s), Seminar 1 hour(s).

Enrollment Restriction(s): Limited to 40 students.

Grade Mode: Letter.

General Education: Oral Skills (OL).

SAS 145 – Digital Communication in Agricultural, Environmental, & Human Sciences (3 units)

Course Description: Use digital media to communicate a succinct, compelling story. In lecture, discussion and activities, create storyboards and scripts, use video, audio, and editing technology, and produce a short media-rich video to effectively convey a message.

Prerequisite(s): Consent of instructor.

Learning Activities: Lecture/Discussion 1.50 hour(s), Studio 1.50 hour(s), Project.

Grade Mode: Letter.

General Education: Visual Literacy (VL).

SAS 190X – Science & Society Seminar (1-4 units)

Course Description: In-depth examination at an upper division level of a special topic in Science and Society. Emphasis upon student participation in learning.

Prerequisite(s): Consent of instructor; upper division standing.

Learning Activities: Seminar 1 hour(s).

Enrollment Restriction(s): Limited to 20 students.

Repeat Credit: May be repeated.

Grade Mode: Pass/No Pass only.

SAS 192 – Internship in Science & Society (1-12 units)

Course Description: Supervised internship on or off campus, in the community, or in institutional settings.

Prerequisite(s): Consent of instructor. Upper division standing.

Learning Activities: Internship 3-36 hour(s).

Grade Mode: Pass/No Pass only.

SAS 197T – Tutoring in Science & Society (1-5 units)

Course Description: Tutoring of students in Science & Society courses.

Assistance with discussion groups and laboratory sections under supervision of instructor.

Prerequisite(s): Consent of instructor. Upper division standing; completion of course being tutored or the equivalent.

Learning Activities: Tutorial 3-15 hour(s).

Repeat Credit: May be repeated if tutoring another Science & Society course.

Grade Mode: Pass/No Pass only.

SAS 198 – Directed Group Study (1-5 units)

Course Description: Directed group study.

Prerequisite(s): Consent of instructor.

Learning Activities: Variable.

Grade Mode: Pass/No Pass only.

SAS 199 – Special Study in Science & Society (1-5 units)

Course Description: Special study in Science & Society.

Prerequisite(s): Consent of instructor; upper division standing.

Learning Activities: Variable.

Grade Mode: Pass/No Pass only.

SAS 298 – Group Study (1-5 units)

Course Description: Group study.

Prerequisite(s): Consent of instructor.

Learning Activities: Variable.

Repeat Credit: May be repeated when topic differs.

Grade Mode: Satisfactory/Unsatisfactory only.

SAS 299 – Graduate Research (1-12 units)

Course Description: Graduate research.

Prerequisite(s): Consent of instructor; graduate student.

Learning Activities: Variable.

Repeat Credit: May be repeated.

Grade Mode: Satisfactory/Unsatisfactory only.

SAS 390 – Teaching Methods in Science & Society (1 unit)

Course Description: Practical experience in methods and problems related to teaching Science & Society courses. Discussion of critical pedagogies specific to teaching of science-societal issues, preparing for and conducting discussion sessions, analyses of texts and supporting material, formulation of assignments, exams.

Prerequisite(s): Consent of instructor; graduate level.

Learning Activities: Discussion 1 hour(s).

Repeat Credit: May be repeated.

Grade Mode: Satisfactory/Unsatisfactory only.