ENVIRONMENTAL STUDIES

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FACULTY ASSOCIATED WITH THE PROGRAM OF ENVIRONMENTAL STUDIES

Professors D. Michelle Addington (School of Architecture, Forestry & Environmental Studies), Paul Anastas (Forestry & Environmental Studies), Gaboury Benoit (Forestry & Environmental Studies), Graeme Berlyn (Forestry & Environmental Studies), Ruth Blake (Geology & Geophysics), Derek Briggs (Geology & Geophysics), Gary Brudvig (Chemistry, Molecular Biophysics & Biochemistry), Benjamin Cashore (Forestry & Environmental Studies), Michael Donoghue (Ecology & Evolutionary Biology, Forestry & Environmental Studies), Michael Dove (Forestry & Environmental Studies, Anthropology), Menachem Elimelech (Chemical & Environmental Engineering), John Mack Faragher (History, American Studies), Durland Fish (Public Health, Forestry & Environmental Studies), Thomas Graedel (Forestry & Environmental Studies), Daniel Kevles (History, History of Medicine), Benedict Kiernan (History), Robert Mendelsohn (Forestry & Environmental Studies, Economics), Alan Mikhail (History), Mark Pagani (Geology & Geophysics), Jeffrey Park (Geology & Geophysics), Peter Perdue (History), David Post (Ecology & Evolutionary Biology), Jeffrey Powell (Ecology & Evolutionary Biology, Forestry & Environmental Studies), Peter Raymond (Forestry & Environmental Studies), Nicholas Robinson (Adjunct) (Forestry & Environmental Studies), Susan Rose-Ackerman (Law School, Political Science), Paul Sabin (History), James Saiers (Forestry & Environmental Studies), Oswald Schmitz (Forestry & Environmental Studies, Ecology & Evolutionary Biology), James Scott (Political Science, Anthropology), Karen Seto (Forestry & Environmental Studies), Kalyanakrishnan Sivaramakrishnan (Anthropology, Forestry & Environmental Studies), David Skelly (Forestry & Environmental Studies, Ecology & Evolutionary Biology), Brian Skinner (Geology & Geophysics), Ronald Smith (Geology & Geophysics, Forestry & Environmental Studies), Stephen Stearns (Ecology & Evolutionary Biology), Charles Tomlin (Forestry & Environmental Studies) (Visiting), John Wargo (Forestry & Environmental Studies, Political Science), Harvey Weiss (Near Eastern Languages & Civilizations, Anthropology), John Wettlaufer (Geology & Geophysics), Robert Wyman (Molecular, Cellular, & Developmental Biology)

Associate Professors David Vasseur (Ecology & Evolutionary Biology), Julie Zimmerman (Chemical & Environmental Engineering)

Assistant Professors Mark Bradford (Forestry & Environmental Studies), Alex Felson (Forestry & Environmental Studies), Anjelica Gonzalez (Biomedical Engineering), William Rankin (History, History of Science)

Senior Lecturers Shimon Anisfeld, Carol Carpenter, Amity Doolittle, John Grim, Fred Strebeigh

Lecturers Mary Beth Decker, Kealoha Freidenburg, Gordon Geballe, Paul Lussier, Linda Puth, Catherine Skinner

Environmental Studies examines the complex relationships between humans and the environment. The major offers grounding in the natural sciences combined with a broad interdisciplinary curriculum. Earth and life sciences combine with the physical sciences to provide the means to observe and assess environmental changes. Study in the social sciences — anthropology, political science, and economics — encourages students to examine the role of nature in shaping communities, governments, and the institutions of human societies that in turn shape environments. Study in the humanities — including history, literature, ethics, religion, and the fine arts — allows students to consider the origins and influence of human values and practices, and also the ways that nature has been perceived and depicted.

Students can elect to pursue either a B.A. or a B.S. within Environmental Studies. The B.A. program is intended for those students interested in an interdisciplinary exploration of environmental issues. The B.S. program is designed for students who want to pursue training in interdisciplinary environmental science.

The major for the Class of 2018 and previous classes Students in the Class of 2018 and previous classes may fulfill the requirements of the major that were in place when they entered the major in Environmental Studies, as described in previous editions of this bulletin. Alternatively, they may fulfill the requirements for the major as described below for the Class of 2019 and subsequent classes.

The major for the Class of 2019 and subsequent classes For both degree programs, the major requires a group of prerequisites or equivalents; four core courses; a concentration of six courses; and a senior requirement, as described below.

Prerequisites Both degree programs require a natural science laboratory or field course focusing on research and analytic methods chosen from EVST 221, EVST 234L, EVST 244, EVST 290, EVST 362, or G&G 126L; and a term course in mathematics, physics or statistics selected from MATH 112 and above (excluding MATH 190), or PHYS 170 and above, or STAT 101 and above. For the B.A. degree, additional prerequisites are one term of chemistry from EVST 102, CHEM 161, or CHEM 163, and one term of biology from BIOL 101 and above, or G&G 125, or MCD 123. For the B.S. degree, additional prerequisites are a two-term lecture sequence in chemistry (or CHEM 118 or CHEM 167), and two terms of biology from BIOL 101-104, or G&G 125, or MCD 123.

Students are advised to take chemistry and biology during the freshman year before enrolling in the EVST core courses in natural sciences. It is recommended that students complete the prerequisites by the end of their sophomore year, although this is not required. Where relevant, students may employ acceleration credits to fulfill science prerequisites.

B.A. degree program In addition to the prerequisites, the B.A. degree requires at least eleven course credits, consisting of the core requirements, the concentration, and the senior requirement.
B.S. degree program In addition to the prerequisites, the B.S. degree requires at least twelve course credits, consisting of the core requirements, the concentration and the two-term senior requirement.

Core courses Two core courses in the humanities and social sciences selected from EVST 120, 226, 255, 340, or 345; and two natural science core courses from EVST 201 and 202L, 200, 223 or 242. Completing one course in each area is recommended before the end of the sophomore year.

Area of concentration Students plan their concentration in consultation with the director of undergraduate studies and the student’s adviser. A concentration is defined as six courses that provide analytical depth in a particular environmental problem or issue of interest, as well as disciplinary expertise. One of these six courses must be an advanced seminar (200 level or higher) that exposes students to primary literature, extensive writing requirements, and experience with research methods. For the B.S. degree, three of the six courses must have the science (Sc) designation, and two must provide interdisciplinary context to the concentration. Past concentrations include Biodiversity and Conservation; Climate Change and Energy; Environmental History; Environmental Policy; Food and Agriculture; Human Health and Environment; and Urban Environments. Students also have the opportunity to design a unique concentration within the major, in consultation with the director of undergraduate studies.

Senior requirement For the B.A. degree, students complete EVST 496, which can be a one- or two-term senior project. One-term senior projects require the permission of the director of undergraduate studies, and are generally undertaken only in conjunction with a double major. Only those students who complete a two-term essay are eligible for Distinction in the Major. For the B.S. degree, students complete two terms of 496.

In the junior year, all students consult with their advisers on the design of the project and submit a preliminary plan to the director of undergraduate studies for approval.

Credit/D/Fail No course taken Credit/D/Fail may be counted toward the major, including prerequisites.

Application to the Environmental Studies major Students typically apply to enter the major during their sophomore year. Applications are accepted throughout the year but decisions are made after two deadlines annually, December 10 and April 10. Applications must be made in writing to the director of undergraduate studies; details can be found on the program’s Web site. Juniors who have already completed considerable course work toward the major may also apply. Students considering a major in Environmental Studies should consult the director of undergraduate studies as early as possible in the freshman year.

Summer Environmental Fellowship During the summer between the junior and senior years, many students gain experience in the field through research or internships in an area pertinent to their senior research project. Internships may be arranged with nonprofit organizations, government agencies, or corporations. Although the summer program is optional, many students take advantage of this opportunity with some financial support from the program.

REQUIREMENTS OF THE MAJOR

Prerequisites B.A. and B.S. degrees – 1 course from EVST 221, 234L, 244, 290, 362, or G&G 126L; MATH 112 or above (excluding MATH 190), or PHYS 170 or above, or STAT 101 or above; B.A. – EVST 102, or CHEM 161, or CHEM 163; BIOL 101 and 102, or G&G 125, or MCDB 123; B.S. – two-term lecture sequence in chem, or CHEM 118 or CHEM 167; two terms from BIOL 101 and 102, or 103 and 104, or G&G 125, or MCDB 123

Number of courses B.A. – at least 11 course credits, incl senior project; B.S. – at least 12 course credits, incl senior project

Specific courses required B.A. and B.S. – 2 courses from EVST 201 and 202L, 200, 223, or 242; 2 from EVST 120, 226, 255, 340, 345

Distribution of courses B.A. – 6 courses in area of concentration, including 1 advanced sem as specified; B.S. – 6 courses in area of concentration, 3 of which must have Sc designation, and including 1 advanced sem as specified

Senior requirement B.A. – one- or two-term research project and colloq (EVST 496); B.S. – two-term research project and colloq (EVST 496)

Introductory Courses

- EVST 010a / G&G 010a, Earth, Resources, Energy, and the Environment Mary-Louise Timmermans Humankind’s interactions with, and place within, the natural world. Plate tectonics and natural disasters, biological evolution and mass extinction, human evolution, population growth and ecology, industrial resources, groundwater and pollution, fossil fuels and energy transitions, the carbon cycle and greenhouse gases, paleoclimates, current global warming, alternative energies, and a planetary perspective on the Earth as a singular oasis in space. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program. SC

- EVST 020a / F&ES 020a, Sustainable Development in Haiti Gordon Geballe The principles and practice of sustainable development explored in the context of Haiti’s rich history and culture, as well as its current environmental and economic impoverishment. Enrollment limited to freshmen. Preregistration required; see under Freshman Seminar Program. WR
* EVST 100b / APHY 100b / ENAS 100b / G&G 105b / PHYS 100b, Energy Technology and Society  
Daniel Prober, Michael Oristaglio, and Julie Paquette
The technology and use of energy. Impacts on the environment, climate, security, and economy. Application of scientific reasoning and quantitative analysis. Intended for non-science majors with strong backgrounds in math and science. Enrollment limited to 24. For application instructions, visit the course site on Classes*v2 (http://classesv2.yale.edu). QR, SC

Core Courses

HUMANITIES AND SOCIAL SCIENCES

EVST 120a / AMST 163a / HIST 120a / HSHM 204a, American Environmental History  
Paul Sabin
Ways in which people have shaped and been shaped by the changing environments of North America from precolonial times to the present. Migration of species and trade in commodities; the impact of technology, agriculture, and industry; the development of resources in the American West and overseas; the rise of modern conservation and environmental movements; the role of planning and impact of public policies. WR, HU

* EVST 130a / RLST 106a, Introduction to Religion and Ecology  
Mary Tucker and John Grim
Introduction to the newly emerging field of religion and ecology and its development over the last several decades. Exploration of human relations to the natural world as differentiated in religious and cultural traditions, in particular the symbolic and lived expressions of these interconnections in diverse religious texts, ethics, and practices. Includes lectures viewed on line. Meets for the first half of the term. ½ Course cr

* EVST 132b, South and East Asian Religions and Ecology  
John Grim
This course introduces students to both South and East Asian religious traditions and their intersection with ecology. The first half of the course will introduce the South Asian religious traditions of Hinduism and Buddhism and briefly Jainism. The second half of this course will explore the East Asian religious traditions of Confucianism, Daoism and East Asian Buddhism in relation to the emerging field of religion and ecology. This overview course identifies developments in the traditions that highlight their ecological implications into the contemporary period.

EVST 189b / HIST 246b, The History of Food  
Paul Freedman
The history of food and culinary styles from prehistory to the present, with a particular focus on Europe and the United States. How societies gathered and prepared food. Changing taste preferences over time. The influence of consumers on trade, colonization, and cultural exchange. The impact of colonialism, technology, and globalization. The current food scene and its implications for health, the environment, and cultural shifts. HU

EVST 190a / AFAM 196a / AMST 163a / ER&M 226a / SOCY 190a, Race, Class, and Gender in American Cities  
Laura Barraclough
Examination of how racial, gender, and class inequalities have been built, sustained, and challenged in American cities. Focus on the twentieth and twenty-first centuries. Topics include industrialization and deindustrialization, segregation, gendered public/private split, gentrification, transit equity, environmental justice, food access, and the relationships between public space, democracy, and community wellbeing. Includes field projects in New Haven. SO

EVST 226b / ARCG 226b, Global Environmental History  
Harvey Weiss
The dynamic relationship between environmental and social forces from the Pleistocene glaciations to the Anthropocene present. Pleistocene extinctions; transition from hunting and gathering to agriculture; origins of cities, states, and civilization; adaptations and collapses of Old and New World civilizations in the face of climate disasters; the destruction and reconstruction of the New World by the Old. Focus on issues of adaptation, resilience, and sustainability, including forces that caused long-term societal change. SO

EVST 255b / F&ES 255b / PLSC 215b, Environmental Politics and Law  
John Wargo
Exploration of the politics, policy, and law associated with attempts to manage environmental quality and natural resources. Themes of democracy, liberty, power, property, equality, causation, and risk. Case histories include air quality, water quality and quantity, pesticides and toxic substances, land use, agriculture and food, parks and protected areas, and energy. SO

EVST 273b, Ecology and the Future of Life on Earth  
Oswald Schmitz
Study of sustainability in a new epoch of human domination of Earth, known as the Anthropocene. Students will learn to think critically and construct arguments about the ecological and evolutionary interrelationship between humans and nature and gain insight on how to combine ethical reasoning with scientific principles, to ensure that species and ecosystems will thrive and persist. SC

* EVST 304b / AMST 348b, Space, Place, and Landscape  
Laura Barraclough
Survey of core concepts in cultural geography and spatial theory. Ways in which the organization, use, and representation of physical spaces produce power dynamics related to colonialism, race, gender, class, and migrant status. Multiple meanings of home; the politics of place names; effects of tourism; the aesthetics and politics of map making; spatial strategies of conquest. Includes field projects in New Haven. SO

EVST 340b / ECON 330b, Economics of Natural Resources  
Robert Mendelsohn
Microeconomic theory brought to bear on current issues in natural resource policy. Topics include regulation of pollution, hazardous waste management, depletion of the world’s forests and fisheries, wilderness and wildlife preservation, and energy planning. After introductory microeconomics. QR, SO
* EVST 345a / ANTH 382a / F&ES 384a, Environmental Anthropology  Carol Carpenter
History of the anthropological study of the environment: nature-culture dichotomy, ecology and social organization, methodological debates, politics of the environment, and knowing the environment.  SO

ENVIRONMENTAL SCIENCE

EVST 180b / CHEM 105b, Chemistry for the Environment  Staff
Exploration of the fundamentals of chemistry, including atoms, molecules, chemical reactions, stoichiometry, chemical/physical properties, and periodic table trends. How chemistry can address global human health and environmental issues through development of appropriate solutions using green chemistry approaches. No prerequisites; intended for non-science majors. Does not satisfy premed chemistry requirements or requirements for the Chemistry major. Not open to students who have completed another chemistry course at Yale.  SC

EVST 201a / G&G 140a, Atmosphere, Ocean, and Environmental Change  Ronald Smith
Physical processes that control Earth’s atmosphere, ocean, and climate. Quantitative methods for constructing energy and water budgets. Topics include clouds, rain, severe storms, regional climate, the ozone layer, air pollution, ocean currents and productivity, the seasons, El Niño, the history of Earth’s climate, global warming, energy, and water resources. Must be taken concurrently with EVST 202L.  QR, SC

* EVST 202La / G&G 141La, Laboratory for Atmosphere, Ocean, and Environmental Change  Ronald Smith
Laboratory and field exercises to accompany EVST 201. Must be taken concurrently with EVST 201.  SC ½ Course cr

EVST 223a / E&EB 220a, General Ecology  David Vasseur and David Post
The theory and practice of ecology, including the ecology of individuals, population dynamics and regulation, community structure, ecosystem function, and ecological interactions at broad spatial and temporal scales. Topics such as climate change, fisheries management, and infectious diseases are placed in an ecological context. Prerequisite: MATH 112 or equivalent.  SC

Intermediate and Advanced Courses

The following courses have been approved for developing areas of concentration. Other courses may be suitable for designing an area of concentration with the permission of the director of undergraduate studies.

EVST 182a / ANTH 300a / E&EB 300a, Primate Behavior and Ecology  Eduardo Fernandez-Duque
Sociobiology of primates compared with that of other mammals, emphasizing both general principles and unique primate characteristics. Topics include life-history strategies, feeding ecology, mating systems, and ecological influences on social organization.  SC, SO

EVST 211b / G&G 211b / HIST 416b / HSHM 211b, Global Catastrophe since 1750  William Rankin
A history of the geological, atmospheric, and environmental sciences, with a focus on predictions of global catastrophe. Topics range from headline catastrophes such as global warming, ozone depletion, and nuclear winter to historical debates about the age of the Earth, the nature of fossils, and the management of natural resources. Tensions between science and religion; the role of science in government; environmental economics; the politics of prediction, modeling, and incomplete evidence.  SC

* EVST 212a / EP&E 300a / PLSC 212a, Democracy and Sustainability  Michael Fotos
Democracy, liberty, and the sustainable use of natural resources. Concepts include institutional analysis, democratic consent, property rights, market failure, and common pool resources. Topics of policy substance are related to human use of the environment and to U.S. and global political institutions.  SO

* EVST 214a / AMST 315a / ER&M 326a, Environmental Inequalities  Sigma Colon
Examination of the intersection of environmental issues and various systems of social injustice, especially racism, sexism, and economic inequality. Topics include why and how minority communities face higher levels of environmental risk; the role grassroots activism plays in mitigating unequal representation; which groups bear disproportionate shares of negative environmental consequences globally; and the role of art in the struggle for environmental justice.  SO

* EVST 234La, Field Science: Environment and Sustainability  L. Kealoha Freidenburg
A field course that explores the effects of human influences on the environment. Analysis of pattern and process in forested ecosystems; introduction to the principles of agroecology, including visits to local farms; evaluation of sustainability within an urban environment. Weekly field trips and one weekend field trip.  SC

EVST 242a, Ecosystems and Landscapes  Mark Bradford and Oswald Schmitz
Introduction to concepts in ecosystem and landscape ecology. Topics include element cycling, food web interactions, species-area relationships, whole system metabolism, and models of biodiversity. Understanding of ecological patterns and processes at multiple scales in order to study, manage, and conserve species and ecosystems.  SC

* EVST 242La, Laboratory for Ecosystems and Landscapes  Mark Bradford and Oswald Schmitz
Laboratory and field exercises to accompany EVST 242. Must be taken concurrently with EVST 242. ½ Course cr

* EVST 244a, Coastal Environments in a Changing World  Mary Beth Decker
The effects of human action and natural phenomena on coastal marine ecosystems. Methods used by coastal scientists to address environmental issues; challenges associated with managing and conserving coastal environments. Priority to Environmental Studies majors; open to nonmajors as space permits.  SC
EVST 245b / F&ES 245b, Global Environmental Governance  Benjamin Cashore
The development of international environmental policy and the functioning of global environmental governance. Critical evaluation of
theoretical claims in the literature and the reasoning of policy makers. Introduction of analytical and theoretical tools used to assess
environmental problems. Case studies emphasize climate, forestry, and fisheries.  SO

* EVST 247b / EP&E 497b / PLSC 219b, Politics of the Environment  Peter Swenson
Historical and contemporary politics aimed at regulating human behavior to limit damage to the environment. Goals, strategies,
successes, and failures of movements, organizations, corporations, scientists, and politicians in conflicts over environmental policy. Focus
on politics in the U.S., including the role of public opinion; attention to international regulatory efforts, especially with regard to climate
change.  SO

* EVST 258b / AMST 258b, Wilderness in the North American Imagination  Eric Rutkow
The idea of wilderness in American history, art, literature, and public policy. Authors include Henry David Thoreau, Nathaniel
Hawthorne, John Muir, Aldo Leopold, John McPhee, and Ramachandra Guha. A class dinner and field trip are held during the term.  HU

* EVST 261a / F&ES 261a / G&G 261a, Minerals and Human Health  Ruth Blake
Study of the interrelationships between Earth materials and processes and personal and public health. The transposition from the
environment of the chemical elements essential for life. After one year of college-level chemistry or with permission of instructor; G&G
110 recommended.  SC

* EVST 275a / F&ES 275a, Ecosystems Patterns and Processes  Staff
Study of ecosystem ecology and biogeochemistry. The use of concepts and data from these disciplines to predict and manage the
impact of environmental changes on ecosystem services underlying the provisioning of resources such as food and clean water. Case studies of
environmental changes include invasive species and changing climate. Undergraduate enrollment limited to 15.  SC RP

* EVST 276La / F&ES 276La, Laboratory for Ecosystems Patterns and Processes  Peter Raymond
Field trips to interpret the ecosystem-level functions of a wide variety of natural landscapes. Must be taken concurrently with EVST 275a.  SC RP ½ Course cr

EVST 292a / GLBL 217a / PLSC 149a, Sustainability in the Twenty-First Century  Daniel Esty
Sustainability as an overarching framework for life in the twenty-first century. Ways in which this integrated policy concept diverges from
the approaches to environmental protection and economic development that were pursued in the twentieth century. The interlocking
challenges that stem from society’s simultaneous desires for economic, environmental, and social progress despite the tensions across
these realms.  SO

EVST 307a / F&ES 307a, Organic Pollutants in the Environment  Shimon Anisfeld
An overview of the pollution problems posed by toxic organic chemicals, including petroleum, pesticides, PCBs, dioxins, chlorinated
solvents, and emerging contaminants. Processes governing the environmental fate of organic pollutants, e.g., evaporation,
bioconcentration, sorption, and biodegradation. Technologies for prevention and remediation of organic pollution. No background in
organic chemistry required.  SO

* EVST 311a / G&G 311a, Environmental Communication for Public Engagement & Policy  Paul Lussier
Analysis, assessment, and application of narrative strategies to the communication of climate and energy science toward public policy
engagement and action. Emerging interdisciplinary theory and research in narratology, sociology, and psychology, as well as cultural,
education, and media sciences.  SO

* EVST 312b, Advanced Science Communications with Impact  Paul Lussier
Exploration of advanced theoretical frameworks for the practice of science communication. Focus on methods that speak to stakeholder
values across government and civil society. Application of strategies to several case projects in partnership with professionals across
multiple sectors. EVST 311 (or precursor CSES 310) is recommended, but not expressly required.  WR, SO

* EVST 320a / F&ES 320a, International Environmental Law  Nicholas Robinson
Examination of how nations negotiate, establish, and implement international environmental law and how the United Nations and other
international agencies function. Simulated negotiations; discussion of diplomatic negotiations regarding climate change that occur during
the term.  SO

* EVST 344b / F&ES 344b, Aquatic Chemistry  Gaboury Benoit
A detailed examination of the principles governing chemical reactions in water. Emphasis on developing the ability to predict the
aqueous chemistry of natural, engineered, and perturbed systems based on a knowledge of their biogeochemical setting. Calculation
of quantitative solutions to chemical equilibria. Focus on inorganic chemistry. Topics include elementary thermodynamics, acid-base
equilibria, alkalinity, speciation, solubility, mineral stability, redox chemistry, and surface complexation reactions.  SC

* EVST 348b, Yellowstone and Global Change  Susan Clark
Introduction to sustainability issues in natural resource management and policy, using the Greater Yellowstone ecosystem as a case study.
Topics include large carnivores, wildlife conservation, parks, energy, and transportation. Priority to Environmental Studies majors.
* EVST 325b / AMST 304b, Food and Documentary  
Ian Cheney
Survey of contemporary public debates and current scientific thinking about how America farms and eats explored through the medium of documentary film. Includes a brief history of early food and agrarian documentaries, with a focus on twenty-first century films that consider sustainable food.  
HU

* EVST 326b / ARCG 362b / G&G 362b, Observing Earth from Space  
Xuhui Lee
A practical introduction to satellite image analysis of Earth’s surface. Topics include the spectrum of electromagnetic radiation, satellite-borne radiometers, data transmission and storage, computer image analysis, the merging of satellite imagery with GIS and applications to weather and climate, oceanography, surficial geology, ecology and epidemiology, forestry, agriculture, archaeology, and watershed management. Prerequisites: college-level physics or chemistry, two courses in geology and natural science of the environment or equivalents, and computer literacy.  
QR, SC

EVST 366b / AMST 364b / FILM 423b, Documentary and the Environment  
Charles Musser
HU, RP

* EVST 367b / ANTH 376b / ANTH 876b, Observing and Measuring Behavior  
Eduardo Fernandez-Duque
Survey of theoretical issues and practical methods relevant to the study of animal and human behavior, primarily in the wild. Topics include research design, behavioral and ecological sampling protocols, basic methods for data analysis, including simple descriptive and analytical statistics, and widely-used technologies that facilitate the study of behavior, such as radiotelemetry. Working around a specific research question, students design their own behavioral study. Prerequisite: Course in evolutionary biology or in the study of animal behavior.  
SC, SO

* EVST 369b / NELC 399b, Agriculture: Origins, Evolution, Crises  
Harvey Weiss
Analysis of the societal and environmental drivers and effects of plant and animal domestication, the intensification of agroproduction, and the crises of agroproduction: land degradation, societal collapses, sociopolitical transformation, sustainablity, and biodiversity.  
SO

* EVST 415b / BENG 405b, Biotechnology and the Developing World  
Angelica Gonzalez
Study of technological advances that have global health applications. Ways in which biotechnology has enhanced quality of life in the developing world. The challenges of implementing relevant technologies in resource-limited environments, including technical, practical, social, and ethical aspects. Prerequisite: MCDB 120, or BIOL 101 and 102.

* EVST 422a / ANTH 409a / ER&M 394 / F&ES 422a, Climate and Society from Past to Present  
Michael Dove
The history of scholarly thinking on the relationship between climate and society, focusing on the social sciences in general and on anthropology in particular. Historical theories about climate and society since the beginning of human civilization; the importance of such theories for understanding contemporary debates about climate change. Special attention to current debates regarding climate politics and science denial.  
SO

* EVST 424a / ANTH 406a / PLSC 420a, Rivers: Nature and Politics  
James Scott
The natural history of rivers and river systems and the politics surrounding the efforts of states to manage and engineer them.  
SO

* EVST 424a / ANTH 406a / PLSC 420a, Rivers: Nature and Politics  
James Scott
The natural history of rivers and river systems and the politics surrounding the efforts of states to manage and engineer them.  
SO

* EVST 463a / AMST 463a and AMST 464b / FILM 455a and FILM 456b, Documentary Film Workshop  
Charles Musser
A yearlong workshop designed primarily for majors in Film and Media Studies or American Studies who are making documentaries as senior projects. Seniors in other majors admitted as space permits.  
RP

Departmental Seminars

Amity Doolittle
Study of the relationship between society and the environment. Global processes of environmental conservation, development, and conflicts over natural resource use; political-economic contexts of environmental change; ways in which understandings of nature are discursively bound up with notions of culture and identity.  
SO

* EVST 290b / F&ES 290b, Geographic Information Systems  
Charles Tomlin
A practical introduction to the nature and use of geographic information systems (GIS) in environmental science and management. Applied techniques for the acquisition, creation, storage, management, visualization, animation, transformation, analysis, and synthesis of cartographic data in digital form.

Senior Project

* EVST 462a or b, Senior Research Project and Colloquium  
Staff
Independent research under the supervision of members of the faculty, resulting in a senior essay. Students meet with peers and faculty members regularly throughout the fall term to discuss the progress of their research. Projects should offer substantial opportunity for interdisciplinary work on environmental problems. Students typically complete a two-term senior essay, but students completing the requirements of two majors may consider a one-term senior project.