ENVIRONMENTAL STUDIES (EVST)

* EVST 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 first-year students. Prerequisites: Consent of instructor. WR

* EVST 030a / ARCG 031a / NELC 026a, Origins of Civilization: Egypt and Mesopotamia  Harvey Weiss
  The origins of the earliest civilizations in Mesopotamia and Egypt along the Nile and Tigris-Euphrates Rivers explored with archaeological, historical and environmental data for the origins of agriculture, the classes and hierarchies that marked earliest cities, states and empires, the innovative monumental architecture, writing, imperial expansion, and new national ideologies. How and why these civilizational processes occurred with the momentous societal collapses at periods of abrupt climate change. Enrollment limited to first-year students. Prerequisites: Consent of instructor. WR, SC

* EVST 100b / APHY 100b / ENAS 100b / G&G 105 / PHYS 100b, Energy Technology and Society  Daniel Prober
  The science and technology of energy. Impacts of 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. QR, SC

EVST 127a / ER&M 127a / SOCY 127a / WGSS 127a, Health and Illness in Social Context  Alka Menon
  Present-day medicine and health care provide solutions to an ever-increasing array of human problems, yet the achievement of health can be elusive. This course will provide a broad introduction to the domains of health and illness in the U.S., with some coverage of international trends and topics. Students analyze how our personal health and public health are shaped by social structures, political struggles, expert knowledge, and medical markets. Topics include the cultural and social meanings associated with health and illness; inequalities in health and health care access and provision; controversies surrounding healthcare, medical knowledge production, and medical decision-making; and the social institutions of the health care industry. None SO

EVST 144a / EDST 144a / ER&M 211a / SOCY 144a, Race, Ethnicity, and Immigration  Grace Kao
  Exploration of sociological studies and theoretical and empirical analyses of race, ethnicity, and immigration, with focus on race relations and racial and ethnic differences in outcomes in contemporary U.S. society (post-1960s). Study of the patterns of educational and labor market outcomes, incarceration, and family formation of whites, blacks (African Americans), Hispanics, and Asian Americans in the United States, as well as immigration patterns and how they affect race and ethnic relations. SO

EVST 191b, Trees: Environmental Biology and Global Significance  Craig Brodersen
  Underlying principles that govern tree biology in both time and space. The biophysics of energy balance, water transport, and gas exchange, from individual plant organs to the tree and forest canopy; principles of cells and membranes; the fundamental differences between plant and animal cells; regional and global patterns in forest dynamics; implications of disruptions in the biotic and abiotic environment. Case studies focus on understanding forests and forest products and their global significance. SC

EVST 211b / EPS 211b / HIST 416b / HSHM 211b, Global Catastrophe since 1750  Bill 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. HU

* EVST 212a / EP&E 390a / 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. WR, SO

* EVST 215b / ENGL 459b / MRRB 459b, Writing about Science, Medicine, and the Environment  Carl Zimmer
  Advanced non-fiction workshop in which students write about science, medicine, and the environment for a broad public audience. Students read exemplary work, ranging from newspaper articles to book excerpts, to learn how to translate complex subjects into compelling prose. Admission by permission of the instructor only. Applicants should email the instructor at carl@carlzimmer.com with the following information: 1. One or two samples of nonacademic, nonfiction writing. (No fiction or scientific papers, please.) Indicate the course or publication, if any, for which you wrote each sample. 2. A note in which you briefly describe your background (including writing experience and courses) and explain why you'd like to take the course. WR, RP

EVST 223a / E&EB 220a, General Ecology  David Post and David Vasseur
  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

* EVST 224a / ENGL 418a, Writing About The Environment  Alan Burdick
  Exploration of ways in which the environment and the natural world can be channeled for literary expression. Reading and discussion of essays, reportage, and book-length works, by scientists and non-scientists alike. Students learn how to create narrative tension while also conveying complex—sometimes highly technical—information; the role of the first person in this type of writing; and where the
human environment ends and the non-human one begins. Formerly ENGL 241. Admission by permission of the instructor only. Students interested in the course should email the instructor at alan.burdick@gmail.com with the following information: 1.) A few paragraphs describing your interest in taking the class. 2.) A non-academic writing sample that best represents you. WR

* EVST 227b, Energy and Environmental Policy Solutions for the Anthropocene Robert Klée
Study of innovative energy and environmental policy solutions for the problems of the Anthropocene—the new epoch of human dominance of the earth. Students explore policies for effective deployment of renewables, smart grids, corporate responsibility, emerging contaminants, zero emission vehicles, environmental information disclosure, carbon sequestration, climate adaptation, sustainable cities, and environmental education. Students critically examine these policies through the lenses of equity and environmental justice, economic impacts (positive and negative), co-benefits, communication, legal governance systems, and politics.

* EVST 228b / HIST 459Jb / HUMS 228b / LITR 345b, Climate Change and the Humanities Katja Lindskog
What can the Humanities tell us about climate change? The Humanities help us to better understand the relationship between everyday individual experience, and our rapidly changing natural world. To that end, students read literary, political, historical, and religious texts to better understand how individuals both depend on, and struggle against, the natural environment in order to survive. HU

* EVST 237a / ENGL 237a / HUMS 234a / LITR 323a, Animals in Literature and Theory Jonathan Kramnick
Consideration of the role animals play in our aesthetic, ethical, political, and scientific worlds through reading of fiction, poetry, philosophy, and critical theory. Topics include: animal sentience and experience; vegetarianism; animal fables; pet keeping; animals alongside disability, race, and gender; and the representation of animal life in the visual arts. WR, HU

* EVST 247a / EP&E 497a / PLSC 219a, 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 255a / F&ES 255a / GLBL 282a / PLSC 255a, Environmental Law and Politics: Global Food Challenges John Wargo
We explore relations among food, environment, health, and law. We consider global-scale avoidable challenges such as: starvation and malnutrition, obesity, other food related human diseases, climate instability, soil loss, water depletion and contamination, microbial hazards, chemical contamination, food waste, dietary convergence, air pollution, energy, packaging, culinary globalization, and biodiversity loss. We focus on laws that influence the world's food system, including those intended to reduce or prevent environmental and health damages. Other laws protect rights of secrecy, property, speech, confidential business information, free trade, worker protection, equal opportunity, and freedom from discrimination. Ethical concerns of justice, equity, and transparency are prominent themes. Examples of effective law, consumer movements and corporate innovations provide optimism for the future of responsible food. SO

* EVST 257b / CLCV 258b / HIST 201b, Ecocultures of Antiquity: Ecocritical Approaches to Ancient Greece and Rome Kirk Freudenburg
This class examines how the Greeks and Romans exploited their natural surroundings not only as physical resources, but as resources for human thought. The focus is on how ancient thinkers, living lives that were largely city-bound and detached from nature, structured their thoughts about the lives they lived (and about human existence more generally) by reference to their nonhuman surroundings: creatures, plants and places, some of which existed in the real world (in places far off, largely unknown and elsewhere; in places penetrated, explored, and/or told of), others of which existed entirely in the imagination, whether as inherited lore, or as places and creatures invented ad hoc by individuals and groups to get certain kinds of cultural work done. We look not only at the how and what, but at the why of nature's encoding via culture, and vice versa (their symbiosis), paying special attention to ancient Rome (though with a short first glance at Homer, Hesiod and Aristotle). We begin by scrutinizing the categories themselves, attempting to find historically appropriate ways to connect modern ecocritical concerns and ways of thought to the ancient world. Topics include: the cosmos, the heavens, and the first humans (and first peoples in their places); humans in their 'kinds' and animals, wild and tame; mountains, rivers, the sea and the undersea; human and animal foods, farming and food ways; wine and fermentation; groves, forests and trees; gardens, flowers, vegetables and fungi; birds, fish, weasels and snakes; earthquakes, floods and natural disasters; pollution, dirt and the city of Rome; the ecocultural lives of others. HU

* EVST 261a / EPS 261a / F&ES 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; EPS 110 recommended. SC

EVST 265b / EPS 255b, Environmental Geomicrobiology Ruth Blake
Microbial diversity in natural geologic habitats and the role of microorganisms in major biogeochemical cycles. Introduction to prokaryote physiology and metabolic diversity; enrichment culture and molecular methods in geomicrobiology. Prerequisite: college-level chemistry. SC

* EVST 287b / AMST 428b / ENGL 383b, Food in Literature, Culture, and Science Wai Chee Dimock
From the global histories of sugar and salt to the latest research on chicken and antibiotics, this course explores some key texts—by Gabriel Garcia Marquez, Sinclair Lewis, Ruth Ozeki, Monique Truong, Jonathan Safran Foer, Octavia Butler, and Margaret Atwood
— both as works of luminous imagination and as entry points to deeper scientific knowledge, encouraging cross-pollination among disciplines. Formerly ENGL 283. WR, HU

* EVST 285b / F&ES 285b, Political Ecology of Tropical Forest Conservation  Amy Doolittle
Study of the relationship between society and the environment focusing on tropical forest conservation. Global processes of environmental conservation, development, and conflicts over natural resource use and control; approaches to conserving trees and forest cover using strategies that support biodiversity and rural agricultural livelihoods; specific focus on tropical forest landscapes dominated by agriculture and cattle ranching practices using Panama and Colombia as case studies. The course includes an optional field trip during Spring Break: March 6–March 15 in Colombia. Admission is by application only. Applications open in late November and close December 9; class list is determined by December 17. 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.

* EVST 299b, Sustainable Development Goals and Implementation  Gordon Geballe
Students develop an understanding of the United Nation’s Sustainable Development Goals (SDGs), and focus on how to manage projects that implement the SDGs. Students develop an understanding of the global sustainability agenda, studying each SDG in detail. Students explore and acquire practical project management skills. The course also taps into the expertise and experience of professors and staff from various disciplines and schools, as well as practitioners directly from the field.

* EVST 304a / AMST 340a / ER&M 381a, 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 305a / GLBL 301a / MMES 305a, Environmental Security in the Middle East  Kaveh Madani
This course overviews how environmental, water, food, energy, and climate change have increasingly become linked to human and national security in the Middle East. It begins by exploring the state of the environment in the region and how the policies of the Middle East governments have lead to serious environmental degradation and subsequent loss of jobs, migration, social tension, violence, and regional conflicts. Drawing on an in-depth analysis of contemporary case/country studies, students learn how these problems can serve as major human and national security threats. This interdisciplinary course is of interest to students with background/interest in environmental science/engineering, ecology, geography, geosciences, social/political sciences, public policy, security and peace building, international relations, diplomacy, and global affairs. SO

EVST 318b / AMST 236b / HIST 199b / HSHM 207b, American Energy History  Paul Sabin
The history of energy in the United States from early hydropower and coal to present-day hydraulic fracturing, deepwater oil, wind, and solar. Topics include energy transitions and technological change; energy and democracy; environmental justice and public health; corporate power and monopoly control; electricity and popular culture; labor struggles; the global quest for oil; changing national energy policies; the climate crisis. WR, HU

* EVST 323a, Wetlands Ecology Conservation & Management  Kealoha Freidenburg
Wetlands are ubiquitous. Collectively they cover 370,000 square miles in the United States and globally encompass more than 5 million square miles. Most points on a map are less than 1 km from the nearest wetland. Yet wetlands are nearly invisible to most people. In this course we explore wetlands in all of their dimensions, including the critical services they provide to other systems, the rich biodiversity they harbor, their impact on global climate, and the links by which they connect to other systems. Additionally, wetlands are lynchpin environments for scientific policy and regulation. The overarching aim of the course is to connect what we know about wetlands from a scientific perspective to the ways in which wetlands matter for people. SC

* EVST 324a / ANTH 322a / SAST 306a, Environmental Justice in South Asia  Kalyanakrishnan Sivaramakrishnan
Study of South Asia’s nation building and economic development in the aftermath of war and decolonization in the 20th century. How it generated unprecedented stress on natural environments; increased social disparity; and exposure of the poor and minorities to environmental risks and loss of homes, livelihoods, and cultural resources. Discussion of the rise of environmental justice movements and policies in the region as the world comes to grips with living in the Anthropocene. SO

EVST 340a / ECON 330a, 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 347a, Introduction to Environmental Chemistry  Gaboury Benoit
Introduction to environmental chemistry and to the nature and behavior of environmental pollutants, including chemical, biological, and physical processes. The fundamental classes of chemical reactions in the environment; critical analysis of chemical data; sampling techniques; analytical methods; natural biogeochemical controls on environmental chemistry. Case studies examine contaminants of special interest such as acid precipitation, nutrients, and sewage. SC
* EVST 369a / AFST 368a / HIST 366Ja, Commodities of Colonialism in Africa  Robert Harms
This course examines historical case studies of several significant global commodities produced in Africa to explore interactions between world market forces and African resources and societies. Through the lens of four specific commodities—ivory, rubber, cotton, and diamonds—this course evaluates diverse industries and their historical trajectories in sub-Saharan Africa within a global context from ~1870-1990s. Students become acquainted with the historical method by developing their own research paper on a commodity using both primary and secondary sources. WR, HU

* EVST 400b / E&EB 275b, Biological Oceanography  Mary Beth Decker
Exploration of a range of coastal and pelagic ecosystems. Relationships between biological systems and the physical processes that control the movements of water and productivity of marine systems. Anthropogenic impacts on oceans, such as the effects of fishing and climate change. Includes three Friday field trips. Enrollment limited to 15. SC

* EVST 415b / BENG 405b, Biotechnology and the Developing World  Anjelica 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 394a / F&ES 422a / GLBL 394a, Climate and Society from Past to Present  Michael Dove
Discussion of the major currents of thought—both historic and contemporary—regarding climate, climate change, and society; focusing on the politics of knowledge and belief vs disbelief; and drawing on the social sciences and anthropology in particular. WR, SO

* EVST 431b, The Physical Science of Climate Change  Peter Raymond and Xuhui Lee
The course provides students with core knowledge on the processes controlling the earth’s climate system. The first half of the class focuses on the four components of the earth climate system, providing a knowledge base on the atmospheric energy and water budgets and the roles of anthropogenic greenhouse gases, the oceans, land and cryosphere in altering these budgets. Students also learn how to run a climate GCM (general circulation model). The second half of the class focuses on impacts of climate change on a number of societal sectors including natural ecosystems, energy use, water resources, the food system and the built environment. SC

* EVST 444b / 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 454b / PLSC 454b, Data Science for Politics and Policy  Fredrik Sävje
Data plays an increasingly important role in policy making and politics. The ability to draw valid conclusions from quantitative information can tilt elections or be the difference between a successful or failed policy. This course teaches how to use tools from statistics, data science, and machine learning to solve problems and challenges faced in policy making and politics. Students learn how data can help people make campaign decisions, detect election fraud, predict election outcomes, and investigate if a policy had the intended effect. Students receive an introduction to statistical programming in R, supervised and unsupervised machine learning, and causal inference. QR, SO

* EVST 463a and EVST 464b / 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

* EVST 473a / ANTH 473a / ARCG 473a / NELC 473a, Climate Change, Societal Collapse, and Resilience  Harvey Weiss
The coincidence of societal collapses throughout history with decadal and century-scale abrupt climate change events. Challenges to anthropological and historical paradigms of cultural adaptation and resilience. Examination of archaeological and historical records and high-resolution sets of paleoclimate proxies. HU, SO

* EVST 496a or b, Senior Research Project and Colloquium  Michael Fotos and 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.