

SUBJECTS OF INSTRUCTION

Courses offered by the School of the Environment are described below. The letters “a” and “b” following the course numbers indicate fall- and spring-term courses, respectively. The letter “E” following a course number indicates an online course. Courses with bracketed titles will not be offered during the 2020–2021 academic year.

In addition to offering courses in the traditional classroom setting, the School of the Environment in recent years has made a growing commitment to providing quality education through online learning. As part of this initiative, the School introduced a series of courses that “flip” the typical classroom model. These courses allow students to watch lectures online while still providing an opportunity for weekly personal interactions with YSE faculty. The digital format helps the instructors incorporate multimedia resources that are difficult to use in the classroom and enables more time for discussion, questions, and/or group work during student-instructor interactions.

Project courses involve individually assigned advanced field or laboratory work, or literature review, on topics of special interest to the student; credits and hours for these projects are determined for each student in consultation with the instructor.

Courses throughout the University are generally open to students enrolled in the School of the Environment, subject to limitations on class size and requirements for prerequisites.

COURSE DESCRIPTIONS

At YSE, new courses are often added after this bulletin is printed; and spring 2021 courses have not yet been scheduled. Our website at <https://environment.yale.edu/courses> will have an updated list, as well as a list of environmental courses available in other departments at Yale. See also Yale Course Search at <https://courses.yale.edu>.

ENV 511a, Ecological Patterns and Processes Kealoha Freidenburg

This course gives students a fundamental mechanistic understanding about the way abiotic (e.g., climate) and biotic (e.g., resources, competitors, predators) factors determine pattern in the distribution and abundance of species. Students learn how individuals within a species cope with changing environmental conditions by altering their behavior, making physiological adjustments, and changing the allocation of resources among survival, growth, and reproduction. Students learn how populations of species coexist within communities and how species interactions within communities can drive ecosystem functioning. Students also learn how ecologists use scientific insight to deal with emerging environmental problems such as protecting biodiversity, understanding the consequences of habitat loss on species diversity, and forecasting the effects of global climate change on species population viability and geographic distribution.

1½ Course cr

ENV 512a, Microeconomics for Environmental Management Matthew Kotchen

This six-week course provides an introduction to microeconomic analysis and its application to environmental policy. Students study how markets work to allocate scarce resources. This includes consideration of how individuals and firms make decisions, and how policy analysts seek to quantify the benefits and costs of consumption and production. We consider the conditions under which markets are beneficial to society and when they fail. We see that market failure arises frequently in the context of environmental and natural resource management. The last part of the course focuses on the design of environmental and natural resource policies to address such market failures. The course is designed to cover basic knowledge of economics analysis and prepare students for ENV 834 and other more advanced offerings.

1½ Course cr

ENV 521a, Physical Science Foundations for Environmental Managers Shimon Anisfeld

This required foundational course provides students with the physical science basics that they need in order to understand and manage environmental problems. The course draws on the following disciplines: climatology, environmental chemistry, geology, hydrology, meteorology, oceanography, and soil science. Focus is on understanding both the underlying concepts and how they apply to real-world environmental challenges. Useful both as a freestanding course and as a gateway to a wide spectrum of intermediate and advanced courses.

1½ Course cr

ENV 522a, Introduction to Environmental Social Sciences Amity Doolittle

The environmental social sciences shed light on how humans define, perceive, understand, manage, and otherwise influence the environment. Insights into the cultural, institutional, political-economic, and historic drivers of human actions are needed to describe and understand human-environment interactions as well as to move toward long-lasting and flexible responses to socio-environmental change. This basic knowledge course is designed to introduce students to a range of social science disciplines that are engaged in understanding the relationships between nature and society. Explicit focus is on how to mobilize the insights gained from environmental social sciences for natural resource management.

1½ Course cr

ENV 550a, Natural Science Research Methods

The course prepares students to design and execute an intensive research project. It covers elementary principles and philosophy of science; research planning, including preparation, criticism, and oral presentation of study plans; communicating research findings; limitations of research techniques; the structure of research organizations; and professional scientific ethics.

3 Course cr

ENV 551a, Qualitative Social Science Research Methods Amity Doolittle

This course is designed to provide a broad introduction to issues of qualitative research methods and design. The course is intended for both doctoral students who are in the beginning stage of their dissertation research, as well as master’s students developing research

proposals for their thesis projects. The course covers the basic techniques of designing qualitative research and for collecting, interpreting, and analyzing qualitative data. We explore three interrelated dimensions of research: theoretical foundations of science and research, specific methods available to researchers for data collection and analysis, and the application and practice of research methods. The final product for this course is a research proposal. 3 Course cr

ENV 553a, Perspectives: Environmental Leadership Julie Zimmerman and Peter Boyd

The course is intended to offer a common experience and exposure to the variety of perspectives represented by YSE faculty and guest experts on the challenges and opportunities of environmental management. This year's theme is Environmental Leadership and over the term we create and foster a leadership toolkit and systems-thinking appreciation that enables first-year M.E.M. students to map out and maximize an impactful path through Yale, their careers, and their lives. 3 Course cr

ENV 573a, Urban Ecology for Local and Regional Decision-Making Morgan Grove

Urban ecology is the interdisciplinary study of urban and urbanizing systems from local to global scales. While urban ecology shares many features with the biological science of ecology, it emphasizes linkages with social, economic, and physical sciences and the humanities. Geographically, the subject includes central and edge cities, suburbs of various ages and densities, and exurban settlements in which urban lifestyles and economic commitments are dominant. In application, urban ecology can be useful as a social-ecological science for making cities more sustainable, resilient, and equitable. Emerging "grand challenges" in urban ecology include the development of robust approaches to and understanding of (1) integrated social-ecological systems in urban and urbanizing environments; (2) the assembly and function of novel ecological communities and ecosystems under novel environmental conditions; (3) drivers of human well-being in diverse urban areas; (4) pathways for developing healthy, sustainable, and disaster-resilient cities; and (5) co-production of actionable science for policy, planning, design, and management. 3 Course cr

ENV 578a, Financial Concepts for Environmental Managers Maureen Burke

This course, which meets Fall-2, exposes students to the financial concepts used by companies to make and evaluate business decisions. The class covers key financial statements of for-profit businesses; building financial projections for a business, project, or investment; financial markets: what they are and how they operate; investors: the tools they use to evaluate potential investments; and common valuation techniques: uses and limitations.

ENV 592a, Documentary Film Workshop Charles Musser

This workshop in audiovisual scholarship explores ways to present research through the moving image. Students work within a Public Humanities framework to make a documentary that draws on their disciplinary fields of study. Designed to fulfill requirements for the M.A. with a concentration in Public Humanities. 3 Course cr

ENV 595a, Yale Environment Review Matthew Kotchen

The *Yale Environment Review* is a student-run publication that aims to increase access to the latest developments in environmental studies. We aim to shed light on cutting-edge environmental research through summaries, analysis, and interviews. During this one-credit course, students produce one or two articles on subjects of their choosing for publication on the YER website. Please refer to our Canvas page for an overview of the different types of content that YER produces. Students receive coaching to improve their writing skills, and their work goes through a rigorous editing process. Participation in Yale Environment Review helps students sharpen their writing skills and familiarize themselves with science communication, and it provides a platform to showcase their expertise. Enrollment is limited to sixteen, and the class is selected through an application process. Application instructions can be found on our Canvas page. Please e-mail environment.review@yale.edu with any questions. *Class meets five to six times throughout the term, dates to be announced. An information session will be held on a date to be determined.*

ENV 602a, Ecosystems and Landscapes Mark Bradford

This course is an introduction to concepts in ecosystem and landscape ecology. Topics covered include biogeochemical cycling, food web interactions, biodiversity, and the abiotic and biotic controls that act on them. The course emphasizes how to integrate this knowledge to understand and manage natural systems so they continue to serve their own and human needs. 3 Course cr

ENV 604a, Social Entrepreneurship in Public Health Teresa Chahine

This is a case-based course about innovation and entrepreneurship for health equity, including racial equity and other drivers of health. COVID-19 has brought to light for many the complexities in drivers of health, and the role of entrepreneurship and cross-sectoral collaboration in eliminating health disparities. We examine cases of entrepreneurship for health equity in the United States and globally, using a research-based framework to analyze the role of innovation and design thinking, resource mobilization, financial viability, cross-disciplinary collaboration, and systems strengthening. 1½ Course cr

ENV 605a, Environmental Risk Communication Andrew Schwarz

Risk communication is a critical but often overlooked part of how organizations identify and manage risks. Risk communication can help people take seriously risks that they might otherwise ignore (e.g., to wear a seatbelt or bicycle helmet, check for radon in their homes, evacuate from a coming hurricane). Risk communication can also provide reassurance when data indicate that a risk is not serious. Effective risk communication enables environmental professionals to communicate information in a way that is understood and accepted by different stakeholders (e.g., the public, industry, government leaders, etc.) and allows the participation of these stakeholders in risk management decisions. This course provides an overview of the theory and practice of effective communication about environmental and health risks to diverse stakeholders. Students are expected to actively participate in class discussions, drawing upon assigned readings, lectures, and videos. 3 Course cr

ENV 608a, Air Pollution and Public Health Krystal Pollitt

Exposure to air pollution is a leading contributor to the global disease burden. This course discusses major emission sources, atmospheric transformation and transport, measurement and modeling techniques for human exposure assessment, and the health impacts of air pollutants. Emphasis is placed on students gaining hands-on experience with measurement (e.g., low-cost sensors, passive samplers) and spatial analysis tools (e.g., ArcGIS) for application to research, public health practice, and community engagement. Through a series of laboratory sessions, students quantitatively characterize indoor and outdoor exposure concentrations and learn methods to critically assess data quality. The public health implications of air pollutant exposure are examined through review of recent epidemiological and toxicological research. The course discusses inequitable distribution of air pollutant exposure across the United States in relation to environmental health disparities. The health benefits of air pollutant intervention strategies in developed and developing regions and implications for public action are also covered. 3 Course cr

ENV 620a, Integrative Assessment Robert Mendelsohn

This course illustrates how to integrate the insights and models of different disciplines to address key environmental management questions facing society. Examples are drawn from across pollution and natural resource issues so that students can become familiar with a diverse set of issues. The course illustrates the merits of learning about the natural sciences, engineering, and economics in order to practice environmental management. 3 Course cr

ENV 633a, Critical Race Theory Gerald Torres

This class studies critical race theory from its origins to its current expression. Understanding the deep interconnections between race and law, and how race and law are co-constitutive, is the project of critical race theory. One of the central claims of critical race theory is that racial subordination is not a deviation from the liberal legal ideal but is, unfortunately, part of its expression. We focus on the origins of the critique that is central to the development of the theory and contrast its analysis with conventional analytic frameworks on race and American law and society. Because it is a positive theory but also driven by a normative vision, we explore the possibility of transforming the relationship between law and racial power. The law is not the only site of critical race theory; it has had a significant impact on other disciplines in the social sciences. We examine those impacts as well. 3 Course cr

ENV 642a, Environmental Justice/Climate Justice Gerald Torres

In this seminar, we focus on the evolution and development of the environmental justice movement. We pay particular attention to its embrace of climate justice, and we ask what conception of justice is at play in both the environmental justice and climate justice movements. We begin with a legal and social-historical survey but quickly bring the inquiry up to the current moment. We explore the legal and policy developments that have followed the environmental justice critique. Each student chooses a particular movement (or one expression of it) and writes a paper bringing to bear all of the questions we raise in the seminar. (For example, how did opposition from environmental justice advocates lead to a reformed climate change initiative in California? Or what is the genesis of the Sunrise movement, and what legal or policy changes would be required to make it a reality?) The paper need not focus on a domestic response, because the environmental/climate justice critique is now global. 3 Course cr

ENV 645a, Urbanization, Global Change, and Sustainability Karen Seto

Urbanization and associated changes in human activities on the land (*land use*) and in the physical attributes of Earth's surface (*land cover*) have profound environmental consequences. Aggregated globally, these effects constitute some of the most significant human impacts on the functioning of Earth as a system. This class examines the interactions and relationships between urbanization and global change at local, regional, and global scales with an emphasis on the biophysical aspects of urbanization. Topics include urbanization in the context of global land use change, habitat and biodiversity loss, modification of surface energy balance and the urban heat island, climate change and impacts on urban areas, urban biogeochemistry, and urbanization as a component of sustainability. Emphasis is on management of urban areas *worldwide* or at national scales for planetary sustainability. 3 Course cr

ENV 646a, Foundations of Agriculture and Environment Stephen Wood

Agricultural systems have a profound impact on the environment, but also depend on environmental processes—such as climate and nutrient cycling—for continued productivity. Because of this two-way relationship, there has been a growing integration of environmental and agricultural sciences over the past several decades with growing recognition that designing and implementing agricultural systems that minimize environmental harm and benefit people is necessary to sustainable development. This course provides foundational knowledge of how agricultural and environmental systems are linked. The goal is to provide theoretical understanding of the important environmental and human processes, as well as practical experience interpreting these processes and applying them to real-world scenarios. 3 Course cr

ENV 654a, Structure, Function, and Development of Trees Graeme Berlyn

This course focuses on two aspects of plant life: (1) basic processes that drive plant development, such as seed formation, germination, seedling establishment, maturation, and senescence; and (2) basic structure and function of plants (such as root systems, leaf formation and development, height, and diameter growth). Differences between different groups of seed plants are analyzed from structural, functional, ecological, and evolutionary standpoints. Special attention is given to woody plants and their importance in the biosphere and human life. Coverage includes tropical, temperate, and boreal trees. Plant biology is discussed in the context of physiological and structural adaptations in terms of strength, storage, and water and solute transport. 3 Course cr

ENV 660a, Forest Dynamics Marlyse Duguid

This course introduces the study of forest stand dynamics—how forest structures and compositions change over time with growth and disturbances. Understanding the dynamic nature of forest stands is important for creating and maintaining a variety of critical

ecosystem services sustainably and synergistically, including sustainable supplies of wood products, biodiversity and wildlife habitats, water, fire protection, and others. Through readings, lectures, discussions, and field trips we explore forest development processes and pathways, concentrating on the driving mechanisms and emergent properties including natural and human disturbances. We make use of New England forests as living laboratories while discussing how similar forest patterns and processes are played out throughout the temperate, tropical, and boreal worlds. This class is a core component of the M.F. degree but is explicitly designed to be accessible to anyone interested in an in-depth exploration of forest ecosystems. 3 Course cr

ENV 679a, Plant Ecophysiology Craig Brodersen

This course focuses on the physiological ecology of plants and their interaction with the biotic and abiotic environment, understood through the lens of first principles. We use a quantitative approach to demonstrate the linkages between photosynthesis, growth, and carbon allocation at the tissue and whole plant level, which can then be scaled up to forests and ecosystems. We also focus on specific physiological and anatomical adaptations plants use to survive in the many varied habitats on Earth. The laboratory component of this course (ENV 679L) involves the theory, programming, and deployment of micrometeorological equipment to monitor environmental conditions in the field, as well as methods for measuring photosynthesis and growth in the greenhouse and field. Enrollment limited to twenty-four. 3 Course cr

ENV 684a, Forest Finance Deborah Spalding

Understanding the tools used in financial analysis is an important component of successful forestland investment and forest management decision-making. This course provides students with a basic suite of financial tools used in the acquisition and management of forestland/timber. It includes an overview of traditional financial analysis metrics used in land acquisition, timber management, and risk management, as well as topics related to supply and demand for forest products, international timberland investment, and emerging trends in forestland investing. The first eight weeks of the course are in lecture format, and the remainder of the course is a case study/project that gives students an opportunity to apply their knowledge in the analysis of an actual “deal.” 3 Course cr

ENV 692a, Science and Practice of Temperate Agroforestry Joseph Orefice

This course explores the science and practices of temperate agroforestry, covering current knowledge of agroforestry science and shedding light on the myths and assumptions that have yet to be tested regarding the integration of trees in agricultural systems. The course begins with an overview of modern agriculture to help us better understand why agroforestry systems have potential to improve the sustainability of farming systems. We also cover the social science regarding agroforestry and why it has not been widely adopted. Silvopasture and forest farming systems are the primary focus, but windbreaks, alley cropping, and riparian forest buffers are also covered. The field of agroforestry has struggled with the promotion of hypothetical practices; this course introduces students to real-world production agroforestry systems and helps them better contribute to financially viable and environmentally sound agricultural operations. 3 Course cr

ENV 707a, Introduction to Environmental Chemistry Gaboury Benoit

A descriptive overview of baseline biogeochemistry and the nature and behavior of pollutants in the environment. The course is designed to aid future environmental professionals who sometimes may find it necessary to make decisions based on knowledge of environmental chemistry. It is geared to the nonspecialist who needs to establish familiarity with various classes of pollutants and the chemical, biological, and physical processes that control their sources, behavior, toxicity, and fate. Topics include the fundamental kinds of chemical reactions in the environment, critical analysis of chemical data, sampling techniques, analytical methods, natural biogeochemical controls on environmental chemistry, water treatment, and green infrastructure, as well as detailed examination of such contaminants as acid precipitation, nutrients, urban runoff, and sewage. Three hours lecture. One class project, problem sets, midterm, final exam. A small number of field trips. Prerequisite: college-level general chemistry. 3 Course cr

ENV 713a, Coastal Ecosystems Shimon Anisfeld

An examination of the natural processes controlling coastal ecosystems, the anthropogenic threats to the health of these systems, and the potential for restoration. Coverage of estuaries, rocky shores, seagrass meadows, coral reefs, and mangrove swamps, with a special emphasis on tidal marshes. The course covers a wide range of physical, chemical, and ecological processes. Anthropogenic impacts covered range from local to global and include nutrient enrichment, hypoxia, sea-level rise, invasive species, over-fishing, chemical pollution, marsh drowning, and wetland filling. 3 Course cr

ENV 722a, Boundary Layer Meteorology Xuhui Lee

This course examines the interactions between the atmosphere and Earth's surface. Students gain an understanding of the surface energy and radiation balance, air motion in the atmospheric boundary layer, impacts of land use on surface climate, land surface parameterization for climate models, and field research methods. Three hours lecture and discussion. Data analysis/problem sets/term paper/presentation. Permission of the instructor required. 3 Course cr

ENV 723a, Wetlands Ecology, Conservation, and Management Kealoha Freidenburg

Wetlands are ubiquitous. Collectively they cover 370,000 square miles in the United States and globally encompass more than five million square miles. Most points on a map are less than one kilometer 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, and their impact on global climate. Additionally, wetlands are linchpin 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. 3 Course cr

ENV 724a, Watershed Cycles and Processes James Saiers

Everyone lives in a watershed, an area of land that funnels rainfall and snowmelt to a stream, river, lake, or section of coastline. This course examines watershed processes that affect, or are affected by, the stocks, flows, and quality of freshwater. It also surveys challenges faced by watershed managers, while emphasizing the science that informs their choices. By drawing from the fields of hydrology, ecology, and chemistry, the course begins by investigating cycles that govern the fates of water, nutrients, carbon, and pollutants within watersheds. This basic knowledge underpins watershed management decisions that are, for example, intended to safeguard drinking-water quality, ensure sustainable freshwater consumption, and preserve ecosystem services that depend on healthy riparian corridors. In coordination with treatments of watershed functions, the course explores the impacts of anthropogenic stresses on freshwater flows, water quality, and the ecology of sensitive watershed ecosystems. The course also covers measurements, models, and other tools used in watershed assessment and case studies of science-based watershed planning and adaptive management. 3 Course cr

ENV 728a, Introduction to Statistics and Data Analysis in the Environmental Sciences Jonathan Reuning-Scherer

An introduction to statistics and data analysis with emphasis on practical applications in the environmental sciences. Includes graphical analysis, common probability distributions, hypothesis testing, confidence intervals, and linear regression. The second part of the course introduces the topics of multiple regression and ANOVA that are typically not covered in an introductory class such as AP statistics. There are weekly problem sets using MINITAB, SPSS, or R, as well as a final project. This course is a prerequisite for other statistics courses offered through YSE, and it presents statistical methods used in many Yale courses in both the natural and social sciences. Three hours lecture. 3 Course cr

ENV 747a, Global Communication Skills William Vance

This course helps students to sharpen their language and strategy in professional communication. Course topics include accent reduction, language accuracy, writing styles, presentation skills, meeting leadership, barriers to communication, and types of persuasion in multicultural contexts. We first address aspects of intelligibility, exploring how improved word choices and speech clarity affect audience understanding. We then look at the problem of comprehension and discuss strategies for increasing the student's ability to listen accurately and read efficiently. We also examine common difficulties and cultural differences in the arrangement of information, use of evidence, and academic argumentation. Several sessions are devoted to specific skills, such as negotiating agreements and writing research reports. The course meets for lecture (two hours), and students attend a weekly small-group practicum (one hour). The practicum allows students to reinforce new communicative behaviors in oral and written assignments, while receiving feedback from peers and the instructor. As students polish their skills, they improve their ability to express ideas and to interact in both academic and professional contexts. Enrollment limited to fifteen. 3 Course cr

ENV 750a, Writing the World Verlyn Klinkenborg

This is a practical writing course meant to develop the student's skills as a writer. But its real subject is perception and the writer's authority—the relationship between what you notice in the world around you and what, culturally speaking, you are allowed to notice. What you write during the term is driven entirely by your own interest and attention. How you write is the question at hand. We explore the overlapping habitats of language—present and past—and the natural environment. And, to a lesser extent, we explore the character of persuasion in environmental themes. Every member of the class writes every week, and we all read what everyone writes every week. It makes no difference whether you are a would-be journalist, scientist, environmental advocate, or policy maker. The goal is to rework your writing and sharpen your perceptions, both sensory and intellectual. Enrollment limited to fifteen. 3 Course cr

ENV 753a, Regression Modeling of Ecological and Environmental Data Timothy Gregoire

This course in applied statistics assists scientific researchers in the analysis and interpretation of observational and field data. After considering the notion of a random variable, the statistical properties of linear transformations and linear combinations of random data are established. This serves as a foundation for the major topics of the course, which explore the estimation and fitting of linear and nonlinear regression models to observed data. Three hours lecture. Statistical computing with R, weekly problem exercises. Prerequisite: a course in introductory statistics. 3 Course cr

ENV 754a, Geospatial Software Design Charles Tomlin

This course introduces computer programming tools and techniques for the development and customization of geospatial data-processing capabilities. It relies heavily on use of the Python programming language in conjunction with ESRI's ArcGIS and on JavaScript in conjunction with Google's Earth Engine geographic information systems (GIS). Three hours lecture, problem sets. Prerequisite: previous experience in GIS. 3 Course cr

ENV 756a, Modeling Geographic Objects Charles Tomlin

This course offers a broad and practical introduction to the nature and use of drawing-based (vector) geographic information systems (GIS) for the preparation, interpretation, and presentation of digital cartographic data. In contrast to ENV 755, the course is oriented more toward discrete objects in geographical space (e.g., water bodies, land parcels, or structures) than the qualities of that space itself (e.g., proximity, density, or interspersion). Three hours lecture, problem sets. No previous experience is required. 3 Course cr

ENV 757a, Data Exploration and Analysis Ethan Meyers

Survey of statistical methods: plots, transformations, regression, contingency tables, analysis of variance, logistic regression, and cluster analysis. Data manipulation, web scraping, and data cleaning techniques are discussed. The R computing language is taught, and web data sources are used. Prerequisite: ENV 728 or the equivalent. 3 Course cr

ENV 759a, Power, Knowledge, and the Environment: Social Science Theory and Method Michael Dove

Introductory course on the scope of social scientific contributions to environmental and natural resource issues, emphasizing equity, politics, and the construction and contesting of knowledge. Section I, overview of the field and course. Section II, framing of environmental problems: placing problems in their wider political context, new approaches to uncertainty and failure, and the importance of how the conceptual boundaries to resource systems are drawn. Section III, methods: the dynamics of working within development projects, and the art of rapid appraisal and short-term consultancies. Section IV, local communities, resources, and (under)development: representing the poor, development discourse, and indigenous peoples and knowledge. This is a core M.E.M. specialization course in YSE, a core course in the combined YSE/Anthropology doctoral degree program, and a prerequisite for ANTH 572. 3 Course cr

ENV 762a, Applied Math for Environmental Studies Eli Fenichel

The language of mathematics is an important leg in the stool of interdisciplinary research and analysis, and many graduate courses at YSE involve mathematical content. However, many graduate students have not taken a math course in years, and their math skills are rusty. Furthermore, many graduate-level mathematical concepts may be entirely new. Experience suggests that many students either opt out of taking courses they are truly interested in or muddle through, struggle with the math, and miss important concepts. AMES is meant to help students refresh or acquire new math skills and succeed in content and “toolbox” graduate-level courses. AMES provides a structured opportunity to learn a range of mathematical concepts used in environmental studies. The course assumes that, at a minimum, students took college algebra and perhaps a semester of calculus (but might not really remember it). Concepts are presented heuristically in a “how to” and “why” approach with examples from environmental studies. The goal is for students to be conversant and have intuition about (i.e., to demystify) why logs, exponents, derivatives, integrals, linear algebra, probability, optimization, stability analysis, and differential equations show up throughout environmental studies. Students learn (review) how to use these techniques. Also covered is a bit of history of math and an introduction to computer programming. 3 Course cr

ENV 773a, Air Pollution Control Drew Gentner

An overview of air quality problems worldwide with a focus on emissions, chemistry, transport, and other processes that govern dynamic behavior in the atmosphere. Quantitative assessment of the determining factors of air pollution (e.g., transportation and other combustion-related sources, chemical transformations), climate change, photochemical “smog,” pollutant measurement techniques, and air quality management strategies. 3 Course cr

ENV 777a, Water Quality Control Jaehong Kim

Study of the preparation of water for domestic and other uses and the treatment of wastewater for recycling or discharge to the environment. Topics include processes for removal of organics and inorganics, regulation of dissolved oxygen, and techniques such as ion exchange, electro dialysis, reverse osmosis, activated carbon adsorption, and biological methods. 3 Course cr

ENV 793a, 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. 3 Course cr

ENV 800a, Energy Economics and Policy Analysis Kenneth Gillingham

This course examines energy policy issues that pertain to the environment, with a focus on providing tools for analyzing these issues. A primary objective is to apply economics to particular issues of energy markets, environmental impacts, investment in renewables, and other energy issues such as transportation and energy efficiency. We cover the economic and technical considerations behind a particular energy policy issue and then discuss a related article or case study. Prerequisites: ENV 512 (or equivalent background) and at least one course on energy. 3 Course cr

ENV 804a, Economics of Natural Resources Robert Mendelsohn

Linking of abstract economic concepts to concrete policy and management decisions. Application of theoretical tools of economics to global warming, pollution control, fisheries, water management, forestry, recreation, and mining. 3 Course cr

ENV 805a, Seminar on Environmental and Natural Resource Economics Kenneth Gillingham, Matthew Kotchen, and Eli Fenichel

This seminar is based on outside speakers and internal student/faculty presentations oriented toward original research in the field of environmental and natural resource economics and policy. Presentations are aimed at the doctoral level, but interested master's students may enroll with permission of the instructors. 1½ Course cr

ENV 807a, Corporate Sustainability Strategy and Management Daniel Esty

This survey course focuses on the policy and business logic for making environmental issues and sustainability a core focus of corporate strategy and management. Students are asked to analyze when and how sustainability leadership can translate into competitive advantage by helping to cut costs, reduce risk, drive growth, and promote brand identity and intangible value. The course combines lectures, case studies, and class discussions on management theory and tools, the legal and regulatory frameworks that shape the business-environment interface, and the evolving role of business in society, including how to deal with a world of diverse stakeholders, increasing transparency, and rising expectations related to corporate environmental, social, and governance (ESG) performance. Self-scheduled examination. 3 Course cr

ENV 816a, Electric Utilities: An Industry in Transition Lawrence Reilly

The U.S. electric utility industry is a \$400 billion business with capital expenditures on the order of \$100 billion per year to replace aging infrastructure, implement new technologies, and meet new regulatory requirements. A reliable electricity infrastructure is essential for

the U.S. economy and the health and safety of its citizens. The electric industry also has a significant impact on the environment. In the United States, electric power generation is responsible for about 40 percent of human-caused emissions of carbon dioxide, the primary greenhouse gas. Electric utilities in the United States are at a crossroads. Technological innovations, improving economics, and regulatory incentives provide a transformational opportunity to implement demand-side resources and distributed energy technologies that will both lower emissions and improve service to customers. Such significant changes could, however, disrupt existing utility business models and therefore may not be fully supported by incumbent utilities. This course focuses on the issues, challenges, risks, and trade-offs associated with moving the U.S. utility industry toward a cleaner, more sustainable energy future. We explore how utilities are regulated and how economic factors and regulatory policies influence outcomes and opportunities to align customer, environmental, and utility shareholder interests to craft win-win-win solutions. 3 Course cr

ENV 817a, Urban, Suburban, and Regional Planning Practice David Kooris

Our cities, towns, and regions represent the cumulative impact of planning policies implemented at multiple scales over the past century. This course explores the dynamic trends facing the United States and its communities and the evolution in planning practice that is occurring at the local and regional scale to address them. It looks at both suburban and urban approaches. The recent deep recession, climate change, and a lack of social cohesion call for a new triple bottom-line approach to decision-making for our future. Existing policies and governance structures are not always well suited for the new challenges and opportunities that we face. Local, state, and the national government are, to varying degrees, crafting new solutions to the challenges of urban and suburban America. 3 Course cr

ENV 822a, Strategic Communication: Delivering Effective Presentations Taly Reich

The focus of this half-term course is to increase students' competencies in oral communication and presentation. Developing and executing effective communication strategies is essential in a variety of business settings. Business leaders are often expected to present their message with confidence and clarity to employees, clients, partners, investors, and the public. This highly interactive, practical course helps students develop confidence in public speaking through weekly presentations and assignments, lectures and discussions, guest speakers, simulated activities, and filmed feedback. Students are given the opportunity to present both individually and as part of a team. We explore the essentials of communication strategy and persuasion: audience analysis, message construction, communicator credibility, and delivery. Students at all levels of mastery of public speaking will benefit from this course. Limited enrollment. YSE students must submit a statement of interest to the instructor. Students are required to attend the first class session in order to remain enrolled in or bid for the course. 1½ Course cr

ENV 824a, Environmental Law and Policy Robert Klee

This course provides an introduction to the legal requirements and policy underpinnings of the basic U.S. environmental laws, including the Clean Air Act, Clean Water Act, and various statutes governing waste, food safety, and toxic substances. Students examine and evaluate current approaches to pollution control and resource management as well as the "next generation" of regulatory strategies, including economic incentives, voluntary emissions reductions, and information disclosure requirements. This course investigates mechanisms for addressing environmental issues at the local, regional, and global levels, and explores the intersection between environmental and energy law and policy. Students gain an understanding of overarching legal and policy concepts, such as federalism, administrative procedure, separation of powers, environmental justice, judicial review, and statutory interpretation. 3 Course cr

ENV 831a, Society and Natural Resources Seminar: A "Reflexive Conversation" Susan Clark

This research seminar explores the relationship between society and natural resources in a genuinely interdisciplinary manner (explicit, systematic, contextual, using a comprehensive meta-framework). This fall's session is a "reflexive conversation" about the problematic situation in which we all now find ourselves. We live in a time of growing uncertainty and mounting problems. This situation can be best understood as constituting a "reflexive moment." The reflexive moment encourages a reconsideration of past developments and future possibilities (personal to global). We want to find the best way to understand ourselves (personally and professionally) in the current and foreseeable problematic situation (local to global, immediate to multi-decade). We should never forget that we share the planet with millions of other forms of life. We want to find ways to mobilize our knowledge and practice to help fellow humans live fulfilling lives (justice) and address real-world challenges on varying scales (environmental health). The question before us: Can we come to some clarity about this reflexive moment, our growing problems (environmental and social), and the myriad relationships involved? We discuss these and many other matters, seeking clarity, a foundation, and direction for ourselves, work, and lives. Active participation, reading, discussion, lectures, guests, and projects make up the seminar. 3 Course cr

ENV 835a, Seminar on Land Use Planning Jessica Bacher

Land use control exercised by state and local governments determines where development occurs on the American landscape, the preservation of natural resources, the emission of greenhouse gases, the conservation of energy, and the shape and livability of cities and towns. The exercise of legal authority to plan and regulate the development and conservation of privately owned land plays a key role in meeting the needs of the nation's growing population for housing and nonresidential development and in ensuring that critical environmental functions are protected from the adverse impacts of land development. This course explores the multifaceted discipline of land use and urban planning and their associated ecological implications. Numerous land use strategies are discussed, such as consensus building, resiliency planning, and proper renewable energy siting, that provide practical tools for professionals to use to create sustainable buildings, neighborhoods, and communities. The focus of this seminar is to expose students to the basics of land use and urban planning in the United States and to serve as an introduction for the YSE curricular concentration in land use. Guest speakers are professionals involved in sustainable development, land conservation, smart growth, renewable energy, and climate change management. 1½ Course cr

ENV 836a / ANTH 541a / HIST 965a / PLSC 779a, Agrarian Societies: Culture, Society, History, and Development Kalyanakrishnan

Sivaramakrishnan, Elisabeth Wood, and Marcela Echeverri Munoz

An interdisciplinary examination of agrarian societies, contemporary and historical, Western and non-Western. Major analytical perspectives from anthropology, economics, history, political science, and environmental studies are used to develop a meaning-centered and historically grounded account of the transformations of rural society. Team-taught. 3 Course cr

ENV 839a, Social Science of Conservation and Development Carol Carpenter

This course is designed to provide a fundamental understanding of the social aspects involved in implementing conservation and sustainable development projects. Social science makes two contributions to the practice of conservation and development. First, it provides ways of thinking about, researching, and working with social groupings – including rural households and communities, but also development and conservation institutions, states, and NGOs. This aspect includes relations between groups at all these levels, and especially the role of politics and power in these relations. Second, social science tackles the analysis of the knowledge systems that implicitly shape conservation and development policy and impinge on practice. The emphasis throughout is on how these things shape the practice of sustainable development and conservation. Case studies used in the course have been balanced as much as possible between Southeast Asia, South Asia, Africa, and Latin America; most are rural and Third World. The course includes readings from all noneconomic social sciences. The goal is to stimulate students to apply informed and critical thinking (which means not criticizing others, but questioning our own underlying assumptions) to whatever roles they may come to play in conservation and sustainable development, in order to move toward more environmentally and socially sustainable projects and policies. The course is also designed to help students shape future research by learning to ask questions that build on, but are unanswered by, the social science theory of conservation and development. No prerequisites. This is a requirement for the combined YSE/Anthropology doctoral degree program and a prerequisite for some advanced YSE courses. Open to advanced undergraduates. Three hours lecture/seminar. 3 Course cr

ENV 840a, Climate Change Policy and Perspectives Daniel Esty

This course examines the scientific, economic, legal, political, institutional, and historic underpinnings of climate change and the related policy challenge of developing the energy system needed to support a prosperous and sustainable modern society. Particular attention is given to analyzing the existing framework of treaties, law, regulations, and policy – and the incentives they have created – which have done little over the past several decades to change the world's trajectory with regard to the build-up of greenhouse gas emissions in the atmosphere. What would a twenty-first-century policy framework that is designed to deliver a sustainable energy future and a successful response to climate change look like? How would such a framework address issues of equity? How might incentives be structured to engage the business community and deliver the innovation needed in many domains? While designed as a lecture course, class sessions are highly interactive. Self-scheduled examination or paper option. 3 Course cr

ENV 850a, International Organizations and Conferences Gordon Geballe

IOC focuses on the historic, present, and future roles of international environmental conferences. Through guest speakers, assigned readings, and discussions, students explore conferences including IUCN's World Conservation Congress, the UN's Convention on Biological Diversity, UNFCCC's climate change conference, and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Students, along with visiting alumni and guest speakers, discuss the roles and impacts of the various conferences in international environmental decision-making and the future of international conferences in a post-COVID world. The course also assesses the potential for improved equity, justice, and inclusion in international conferences, organizations, and their secretariats. Student groups examine the mission statements and impacts of conferences and develop work plans for new or existing conferences that they envision filling existing gaps while also considering the challenges and opportunities of the future. Prerequisite: ENV 840 is strongly recommended. 3 Course cr

ENV 877a, Anthropology of the Global Economy for Conservation and Development Carol Carpenter

This seminar explores topics in the anthropology of the global economy that are relevant to conservation and development policy and practice. Anthropologists are often assumed to focus on micro- or local-level research, and thus to have limited usefulness in the contemporary, global world of conservation and development policy. In fact, however, they have been examining global topics since at least the 1980s, and little current anthropological research is limited to the village level. More importantly, the anthropological perspective on the global economy is unique and important. This course examines the topics that make up this perspective, including using a single commodity to study the global economy, theorizing the transition to capitalism, the moral relation between economy and society, models for thinking about power in the global economy, articulations between rural households and the global economy, rural-urban relations in the global economy; the process of becoming a commodity, the commons debate, credit and debt, contracting and flexible accumulation, globalization and scale, and theorizing REDD. Readings for the course come from the subfields of environmental anthropology, economic anthropology, the anthropology of development, and the anthropology of conservation. This class is a prerequisite for ENV 693. Though designed for master's and doctoral students, it is open to advanced undergraduates. Three hours lecture/seminar. 3 Course cr

ENV 878a, Climate and Society: Past to Present Michael Dove

Seminar on the major traditions of thought – both historic and contemporary – regarding climate, climate change, and society, drawing on the social sciences and anthropology in particular. Section I, overview of the field and course. Section II, continuities from past to present: use of differences in climate to explain differences among people; differences between Western and non-Western intellectual traditions; and the ethnographic study of folk knowledge. Section III, impact on society of environmental change: environmental determinism in the nineteenth and twentieth centuries; attribution of historic cases of societal “collapse” to extreme climatic events; and the role of extreme events in the development of a society. Section IV, vulnerability and control: how societies cope with extreme climatic events; and how such events reflect, reveal, and reproduce socioeconomic fault lines. Section V, knowledge and its circulation:

construction of knowledge of climate and its extremes; and contesting of knowledge between central and local authorities and between the global North and South. The main texts, *The Anthropology of Climate Change* and *Climate Cultures*, were written especially for this course. Two-hour lecture/seminar. This class has a Yale College WR designation 3 Course cr

ENV 884a, Industrial Ecology Marian Chertow

Industrial ecology studies (1) the flows of materials and energy in industrial and consumer activities, (2) the effects of these flows on the environment, and (3) the influences of economic, political, regulatory, and social factors on the flow, use, and transformation of resources (White 1994). The goals of the course are to define and describe industrial ecology; to demonstrate the relationships among production, consumption, sustainability, and industrial ecology in diverse settings and at multiple scales; to show how industrial ecology serves as a framework for the consideration of environmental and sustainability-related aspects of science, technology, and policy; and to define and describe tools, applications, and implications of industrial ecology. 3 Course cr

ENV 892a, Introduction to Planning and Development Alexander Garvin

This course demonstrates the ways in which financial and political feasibility determine the design of buildings and the character of the built environment. Students propose projects and then adjust them to the conflicting interests of the financial institutions, real estate developers, civic organizations, community groups, public officials, and the widest variety of participants in the planning process. Subjects covered include housing, commercial development, zoning, historic preservation, parks and public open space, suburban subdivisions, planned communities, and comprehensive plans. 3 Course cr

ENV 894a, Green Building: Issues and Perspectives Peter Yost

Our built environment shapes the planet, our communities, and each of us. Green buildings seek to minimize environmental impacts, strengthen the fabric of our cities and towns, and make our work and our homes more productive and fulfilling. This course is an applied course, exploring both the technical and the social-business-political aspects of buildings. Topics range from building science (hygrothermal performance of building enclosures) to indoor environmental quality; from product certifications to resilience (robust buildings and communities in the face of disasters and extended service outages). The purpose of the course is to build a solid background in the processes and issues related to green buildings, equipping students with practical knowledge about the built environment. Extensive use is made of resources from BuildingGreen, Inc., one of the leading information companies supporting green building and green building professionals. The course takes a “joint-discovery” approach with substantial emphasis on research and group project work, some fieldwork, and online individual testing. There are too many topics within green building to cover in one term, so the course is broken down into two sections. The first six weeks focus on the following topics, led by the instructor and/or an expert guest lecturer: building science, materials, indoor environmental quality, rating programs and systems, resilience, systems integration. The second half of the course focuses on selected topics driven by students and their particular interest/academic focus. The class meets once a week, with the instructor available to students that same day. Enrollment limited to twenty-four. 3 Course cr

ENV 900a, Doctoral Student Seminar and Responsible Conduct of Research Oswald Schmitz

This course provides the foundation for doctoral study at the School of the Environment. Students learn what it means to do scholarly research as well as become adept with philosophy of science and research methodology and proposal writing, as a basis for exploring diverse approaches to formulating and addressing research questions. Students work with their advisers to put these concepts and principles into practice to develop the basis for their dissertation research (including building bibliography, identifying and crafting research questions, formulating research hypotheses, and drafting a research proposal). Students further learn about funding opportunities and procedures for submitting grants. The course also covers professional ethics and responsible conduct of research, including ethical approaches to inquiry and measurement, data acquisition and management, authorship and publication, peer review, conflicts of interest, mentoring, collaborative research, and animal and human subjects research. Finally, the course explores ethical ways to advocate for the application of scholarly knowledge in the interest of environmental problem solving. Weekly assigned readings support concepts and issues addressed in class. Students present their embryonic research ideas in class and use feedback from the group to further develop their ideas.

ENV 902a, Environmental Anthropology Research Lab Michael Dove

A biweekly seminar for Dove doctoral advisees and students in the combined YSE/Anthropology doctoral program. Presentation and discussion of dissertation prospectuses and proposals, dissertation chapters, and related publications; collaborative writing and publishing projects on subjects of common interest; and discussion of such topics as grantsmanship, data analysis, writing and publishing, and the job search. Two and one-half hour seminar.

ENV 953a, Sustainable Business Capstone Consulting Clinic Peter Boyd

This course provides students with a capstone experience, consulting to established organizations confronting real-life challenges at the intersection of business and environmental sustainability. Students apply tools and insights gained in this and other courses, including ENV 553, to a defined project, creating deliverables that will be useful to the partner organizations. The course is designed to help prepare anyone who wishes to become a consultant after graduation, though it is also intended to be useful for those who plan to engage with consultants in their career post-Yale. Client briefs are topical and relevant to challenges and opportunities faced by their organizations, and intersect business and environmental opportunity. They are also likely to surface potential trade-offs and require addressing cross-cutting critical issues of justice, equity, diversity, and inclusion—all complicated by living through, and emerging from, the pandemic. Clients are on hand to provide insight and guidance at points throughout the term. Through a combination of individual and group work and lively discussion, students establish an understanding of the client’s wider purpose and priorities; then help co-define and connect

the potential success of the project with the organization's broader goals. Students work together in small consulting teams, holding each other accountable to perform and creating defined deliverables for the client. 3 Course cr

ENV 954a, Management Plans for Protected Areas P Mark Ashton

A seminar that comprises the documentation of land use history and zoning, mapping and interpretation, and the collection and analysis of socioeconomic, biological, and physical information for the construction of management plans. Plans are constructed for private smallholders within the Quiet Corner Initiative partnership managed by the Yale School Forests. In the past, plans have been completed for the Nature Conservancy; Massachusetts Trustees of Reservations; town land trusts; city parks and woodlands of New Haven, New York, and Boston; and the Appalachian Mountain Club. Ten days fieldwork. Enrollment limited to twenty. Must also register for ENV 957, Field Skills in Land Stewardship. Prerequisite: ENV 659 or permission of the instructor. 3 Course cr

ENV 955a, Seminar in Research Analysis and Communication in Forest Ecology P Mark Ashton

Students work through the peer-review publication process on data sets and projects in applied forest ecology. Discussions involve rationale and hypothesis testing for a project, data analysis techniques, reporting and interpretation of results. It is expected that manuscripts developed in the course are worthy of publication and that oral presentations are of a caliber for subject area conferences and meetings. Three hours lecture. Enrollment limited to twelve. Prerequisite: ENV 659 or permission of the instructor. 3 Course cr

ENV 957a, Field Skills in Land Stewardship P Mark Ashton

An intensive technical seminar and field ecology seminar that is taught in combination with ENV 954. In this course students learn field skills that contribute to the base set of information used in assessment, planning, prescription writing, and management of forest and open space. Students learn to identify plants; interpret surficial geology, soils, and hydrology; and read the land for use history. Assessments learned in a series of field exercises comprise forest health and invasive surveys, wildlife habitat evaluations, and soil surveys and wetland delineation. This culminates in understanding and developing a site classification. Lastly, students learn field inventory and sampling techniques in data collection for soils, geology, plants, and wildlife habitat. 3 Course cr

ENV 959a, Clinic in Climate Justice, Climate Policy, Law, and Public Health Robert Dubrow, Laura Bozzi, and Marianne Engelman-Lado

This course, an innovative collaboration between Yale School of Public Health, Yale School of the Environment, and Vermont Law School, includes students from both Yale and Vermont Law School. In the course, interdisciplinary student teams carry out applied projects that incorporate elements of climate justice, climate policy, and/or law with public health. Each team works with a partner organization (e.g., state agency, community organization, other nongovernmental organization) or on an ongoing project of the Yale Center on Climate Change and Health and/or the Vermont Law School Environmental Justice Clinic. A given team may include students from one institution or from both institutions, in which case team members work together remotely. The course meets weekly at Yale School of Public Health and Vermont Law School, respectively, connected by Zoom. It affords the opportunity to have a real-world impact by applying concepts and competencies learned in the classroom. This course should be of interest to graduate and professional students across the University and is open to Yale College juniors and seniors. In addition, this course is one of the options available to students to fulfill the practice requirement for the M.P.H. degree at YSPH and the capstone requirement for the M.E.M. degree at the Yale School of the Environment. Enrollment is by application only; check the Yale Center on Climate Change and Health website or the course's Canvas site for more information. 3 Course cr

ENV 960a, Climate Solutions Capstone: Nature-Based Solutions Clinic Brad Gentry

The course pairs teams of students with state and local governments and nonprofit organizations to help advance the nature-based solutions/investments they are pursuing. The focus of the course is on how policy and financing efforts might help advance nature-based solutions from either a mitigation perspective (e.g., storing carbon) or in adaptation and resilience efforts (e.g., managing flooding, reducing temperatures, improving health). Our hope is to attract students from different specializations and backgrounds to form multidisciplinary teams. Projects being offered through the course can be seen on the YSE course site. The course sessions start with an overview of climate and nature-based solutions, followed by practice-based sessions on developing teamwork and consulting skills. The focus on nature-based solutions covers many aspects of the implementation needs of such approaches, such as policy analysis, financing structures, targeted research, and beyond. Once teams are formed and project scopes refined, most class sessions are more focused on allowing students to work on their projects, as well as providing opportunities for feedback and guidance. At the end of the term, the students present their findings and recommendations to their project sponsors and each other. This course is being coordinated with ENV 979, the spring climate solutions capstone on subnational actors (taught with more of an energy focus) so that active and ongoing relationships can be maintained with clients over time. 3 Course cr

ENV 961a, Environmental Law and Politics: Research and Advanced Topics Seminar John Wargo

This research seminar explores the structure and effectiveness of a diverse suite of environmental laws and policies that influence global patterns of food production and consumption. We focus on environmental and human health effects. Types of law to be considered include: water quality, air quality, energy efficiency, CO₂E emissions, fisheries, land use change, chemical and microbial contamination, genetic technologies, additive restrictions, waste management, health protection, and worker safety standards. Where possible, comparisons are made between U.S. and EU laws and policies. Other laws that affect global food production include those that protect rights of secrecy, physical and intellectual property, speech, confidential business information, international trade, worker protection, equal opportunity, and freedom from discrimination. Still other laws govern food subsidies, taxation, tariffs, fraud, freedom of speech, liability, defamation, preemption, administrative procedures, and compensation. The central tensions in this legal web are defined by the

desire to simultaneously protect private trading rights, promote economic growth, and prevent damages to the environment, health, and climate stability. 3 Course cr

ENV 970a, Environmental Protection Clinic: Policy and Advocacy Doug Kysar

The clinic's mission is to train students in environmental advocacy through skills-based seminars, interdisciplinary project work, and collaboration with the Natural Resources Defense Council and other significant environmental organizations. Students are assigned to teams of two-to-four members drawn from both the Law School and the School of the Environment. Teams work on a project developed in collaboration with client organizations, with most projects having both legal and policy components. In addition to covering substantive areas of environmental law, clinic seminars help students master the tools of effective environmental advocacy, including the abilities to research law and science, write and cite persuasively, navigate environmental organizations, and manage projects cooperatively. Enrollment limited to eighteen. For all questions, please e-mail jennifer.skene@yale.edu. *Note:* Attendance at the first-class meeting is mandatory for admitted students and for those on the waiting list who wish to remain in consideration for admission if a place becomes available. Admitted students must confirm their participation in advance of the first class by a date designated by the instructors. A no-drop policy applies. Students in the School of the Environment (and students from any other school besides Yale Law School) must complete the clinic's Bidding Form by 4:30 p.m. on June 27. 3 Course cr

ENV 972a, Advanced Environmental Protection Clinic Doug Kysar, Lisa Suatoni, Jennifer Skene, and Conor Dwyer Reynolds

Open only to students who have successfully completed the Environmental Protection Clinic (ENV 970). No statement of interest required. Attendance at clinic seminar is optional. For all questions, please e-mail jennifer.skene@yale.edu. Permission of the instructor required.

ENV 980a, Social Justice in the Global Food System Capstone Kristin Reynolds

This course explores social justice dimensions of today's globalized food system, considering justice in terms of sociopolitical and environmental dynamics. We connect theory and practice through work with community-based organizations working at the nexus of food, agriculture, and social justice. The capstone project work is grounded in food and social justice concepts examined through course materials and seminar discussions. We examine how governmental environmental strategies affect social equity in the food system at multiple scales. We discuss how land grabbing or food insecurity is connected to relative power on the global stage. We consider how phenomena such as structural violence and neoliberalization surface within the food system, and what this means for sustainability and justice—in urban and rural settings. We examine and debate concepts and practices including food sovereignty, agroecology, black agrarianism, and the right to food used to advance positive change. Through the capstone project, students have the opportunity to deepen learning and contribute to the work of community groups forging pathways for equity and justice in the food system, particularly among communities historically marginalized from mainstream economies and policy making. Project work includes meetings with organizational leaders to understand context and co-develop appropriate project approaches. Students work in groups to conduct in-depth research and analysis, and engage in additional professional and educational activities connected to the project. Student groups prepare a final presentation and report to be shared with the partner organizations. The course provides opportunities to develop competencies in analyzing global food system phenomena through social justice frameworks, and working within diverse settings on food and social justice issues, as practice for management, policy making, and other professional roles. 3 Course cr

ENV 991a, Advanced Climate, Animals, Food, and Environment Law and Policy Doug Kysar and Jonathan Lovvorn

Open only to students who have successfully completed ENV 981. Paper required. Permission of the instructors required. In addition to listing this course among experiential permission selections, interested students should submit a brief statement describing the project they intend to pursue through the Advanced CAFE Lab. Statements should be submitted by 4:30 p.m. on the last day of Yale Law School's bidding period. The instructors will coordinate a regular meeting time once student schedules are set. Prerequisite: ENV 981.