



EN Credit 11: Continuing Education

Total Continuing Education Courses: 533

Total Continuing Education Courses that Address Sustainability: 22

Continuing Education Courses that Address Sustainability:

ART 07: Visualizing the Natural World through Photography

So often our photographs fall short of the wonderment we experience while actually looking at a scene in the natural world. This course will help photographers create images that match the awe and capture the spirit of what they see and experience while in nature. Students will engage in hands-on practice to investigate and cultivate composition and framing; a sense of place, light, and ambience; landscapes; and the world of macro close-ups. Field trips to the Bay and the Santa Cruz Mountains will provide student photographers with boundless opportunities to explore the many facets of nature photography. This course will teach students how to create photographs that hold “the spirit of place”—and its trees, flowers, water, meadows, hills, waves, sand, and earth—with nature keenly discerned.

ART 56: Landscape Photography in Yosemite: A Field Workshop

Join us for a hands-on field photography workshop in Yosemite National Park in late April. This workshop will explore four different areas of the park with group shoots in the morning and afternoon. There will also be ample free time to explore other areas of the park with our cameras. Before the Yosemite excursion, we will have two prep meetings on campus to cover the basics of landscape photography, drawing inspiration from the classical black-and-white works of Ansel Adams and the color photography of Galen Rowell. After the trip, we will meet twice again in the classroom to review the student work from the weekend excursion. This course is open to beginning- and intermediate-level photographers looking to expand their shooting skills and broaden their vision. Students must own and be familiar with their cameras to take full advantage of this course.

BOT 60: Designing Your California Native Plant Garden

Summer is a perfect time to plan your California native plant garden, and this course will take us on the path from site assessment to master plan. In this course, students will learn how to bring the natural beauty of our native flora into the landscape. We will explore the various types of native plants, from tree to annual, and—based on their natural habitat—the conditions in which they grow best. Students will come to know how native plants use design elements such as form, color, and size to best serve their function in nature and how we can employ these strategies in our own successful gardens. By the end of the course, students will be able to choose plants that attract specific wildlife, go well under oaks, or solve many other goals and conditions commonly found in the world of gardening. Students will be well on their way to welcoming autumn, the best season to shop for and install native plants. The course includes a Saturday field trip to exemplary local native plant gardens.



BUS 197: Clean Energy: Market and Investment Opportunities

The disruption of the energy industry, the largest industry in the world, is opening up some of the largest business opportunities of the 21st century. However, a combination of misinformation, market hype, and energy illiteracy has created misunderstanding of even the most fundamental issues. This course will start with a long view of energy, analyzing the viability of energy options, looking at primary sources and uses, technology trends, economics, regulatory and financial environments, and geopolitics. What is the future of energy? What are the real, scalable market opportunities and what are obsolete or dead ends? Should Japan gamble on nuclear? Should India or China do biofuels? How about wind, geothermal, or solar? What is the future of transportation? Hydrogen or electric vehicles? What is the new architecture of energy and why will it totally disrupt energy as we know it today?

We will explore several market opportunities including software, finance, electronics, crowdsourcing and crowdfunding, trading, hardware, construction and development, many of them in a solar-related context: industrial, commercial, residential, and island-scale; energy storage and electric vehicles; clean water; and the smart grid. The course will feature guest speakers, including investors, founders, and executives of clean energy companies.

DSN 203: Cars: Past, Present, and Future

In F. Scott Fitzgerald's novel "The Great Gatsby," it was a murder weapon. In the movie "The Graduate," it was a symbol of youthful rebellion. In countless songs it has served as a metaphor for everything from sexuality to social status. It has shaped our cities and changed our history. It has expanded our horizons and determined our politics. It is the automobile.

In this course, we will explore the past, present, and future of the automobile, bridging the humanities, social sciences, design, and engineering, and taking up the human experiences of designing, making, driving, being driven, living with, and dreaming of the automobile. Conversations with guest colleagues from Stanford and beyond will focus on a different theme each week and will be supported by readings and media: cars in the movies; the quest for speed and performance; the engineering challenges of automobility; the psychology of driving; automotive archaeology; the future of mobility; autonomous cars; the car as art; and cars and globalization. Overall the course is intended to offer a case study in the interdisciplinary understanding of human-centered design. Rooted in an appreciation of the richness of our human experience with the car, the course is informed by history, archaeology, ethnography, human-technology interaction, mechanical engineering, and cognitive science.



EGL 243: Food Writing from Inspiration to Publication

*It's all about the writing. Maybe you want to start a blog about your food-obsessed life; or write a meal-centered memoir (grandmothers included); or tell the world what you really think about umami. The subject of food is a hot topic, and food writers are in a favored position to capitalize on that fascination. But in today's competitive environment, the writing has to sizzle. In this intensive course, weekly and in-class writing exercises will provide experience in many aspects of food writing, including restaurant reviews, magazine and newspaper articles, blogs, query letters, cookbooks, memoir, culinary literature, history and research, literary agents and publishers, food-related organizations, and marketing. You will receive personal feedback on all your work; this is a course unlike any you've ever taken to help make your writing more compelling, attention getting, and destined for publication. Recommended reading will include Diane Ackerman's - *Natural History of the Senses*; M.F.K. Fisher's - *The Art of Eating*; A.J. Liebling's - *Between Meals*; Harold McGee's - *On Food and Cooking*; Ruth Reichl's - *Tender at the Bone*; and the instructor's - *Out of the Kitchen: Adventures of a Food Writer*.*

EVT 374: Jasper Ridge's 40th Anniversary: Reviving the Science/Statecraft Dialogue

Please join us as we celebrate the anniversary of the Jasper Ridge Biological Preserve, Stanford's remarkable 1,200-acre field station where pioneering scientific research has been generated in more than a dozen disciplines. In honor of its 40th year, the Jasper Ridge Biological Preserve, the Stanford Woods Institute for the Environment, and Stanford Continuing Studies will offer two programs, "Reviving the Science/Statecraft Dialogue" and a "Live Broadcast of National Public Radio's Science Friday," with journalist, science educator, and author Ira Flatow.

*How can the relationship between scientists and politicians be improved, and how can an improved relationship benefit public policy? NPR Science Friday host Ira Flatow and a distinguished panel of scientists, social entrepreneurs, and policymakers will discuss how public perception of the authority and reliability of science and scientists influence national and global policy, and how these perceptions can be reshaped. Ira Flatow (moderator): NPR science reporter, host and writer of the Emmy Award-winning public television show *Newton's Apple*; a reporter for CBS and CNBC; host of *Science Friday* since its creation in 1991; and founder of the non-profit *Science Friday Initiative*, which provides funding for *Science Friday*. Christopher Field is the Melvin and Joan Lane Professor for Interdisciplinary Environmental Studies, Stanford University; a Heinz Award winning global ecologist; and a lead author of the Nobel Prize winning assessment report of the Intergovernmental Panel on Climate Change (IPCC). Adam Lowry is the co-founder and chief greenskeeper of Method home care products and a former climate scientist, Carnegie Institution for Science. Jane Lubchenco, is the former Director, National Oceanic and Atmospheric Administration (NOAA); a recipient of the Heinz Award, MacArthur and Pew Fellowships, and the Nierenberg Prize for Science in the Public Interest.*



EVT 375: Jasper Ridge's 40th Anniversary: Live Broadcast of National Public Radio's Science Friday

Please join us as we celebrate the anniversary of the Jasper Ridge Biological Preserve, Stanford's remarkable 1,200-acre field station where pioneering scientific research has been generated in more than a dozen disciplines. In honor of its 40th year, the Jasper Ridge Biological Preserve, the Stanford Woods Institute for the Environment, and Stanford Continuing Studies will offer two programs, "Reviving the Science/Statecraft Dialogue" and a "Live Broadcast of National Public Radio's Science Friday," with journalist, science educator, and author Ira Flatow. Join National Public Radio's Ira Flatow for the live broadcast of Science Friday. From the outer reaches of space to the tiniest microbes in our bodies, Science Friday is the trusted source for news about science, technology, and other cool stuff. Each week host Ira Flatow mixes it up with people in the know and those who want to be. It's brain fun, for curious people. For more than 22 years, Science Friday has brought the top stories in science and technology to radio listeners and given them a chance to join in the discussion by asking questions and making comments during the live broadcast.

GEO 02: Geology of America's Enchanting National Parks and Monuments

The national parks and monuments contain some of the most spectacular scenery on Earth, and the foundation for that scenery is the underlying geology. Most folks know of Yosemite, the Grand Canyon, Death Valley, and the like. We will explore these magnificent settings, but in addition to the most popular ones, we will also investigate some lesser-known parks and monuments, selected for their outstanding and unique features. We will feature many of these relatively unknown parks as we attempt to understand the processes, rocks, and landforms responsible for their great beauty. Devil's Tower, Craters of the Moon, and Acadia National Park are just a few of the lesser-known locations that we will include.

Knowledge enhances the aesthetic appreciation of the Earth, and toward that end we will explore all the major landform environments so that we can better appreciate these great parks and monuments. We will study sites that feature magnificent panoramas and secluded vistas, glacial terrain and river gorges, sand dunes and volcanoes, coastal settings and deserts, and a variety of rock types. We will look at a lot of images and have at least one all-day field trip.

GEO 130: Geologic Gems of Northern California

Northern California contains a rich tapestry of scenic landscapes and fascinating geology. Magnificent hidden beaches form our western boundary with the Pacific, volcanic peaks and parks lie to the north, Sierran gold and Yosemite tempt us to the east, and an interesting mix of varied geologic sites and landforms lie to the south. With mines and marshes ringing the Bay, all are adjacent to our well known plate-tectonic boundary, the San Andreas Fault. We will explore these easily accessible sites, acquiring the basic geologic knowledge necessary to understand and appreciate their significance and enjoy their beauty. In this course, we will look at, among other sites, the geology of such places as Mount Lassen and Mount Shasta, Point Reyes and Point Lobos, Malakoff Diggins State Historic Park and Yosemite, Sequoia and Kings Canyon,



Pinnacles, and the New Almaden and Black Diamond mines around San Jose and Mount Diablo. This course will include a field trip to a site determined by the class.

POL 04: Local Government: Why Does It Exist and Why Should I Care?

Have you ever wondered if there was a meaningful way in which you could participate in your community, and perhaps influence the decision-making process for the better? Local government--through collection of property and sales tax--provides essential services to the community, including fire and police services, parks, libraries, road repair, and trash collection. But what relationship does local government have with other regional agencies, the state and the federal government, and most importantly, to us, the public? This course will examine the very core of our local government with a series of key expert guest speakers. The conversation will include topics of importance, such as how our elected officials develop policy, the Ralph M. Brown Act (which insures transparency in the decision making process), pension reform, ethical considerations, referenda, unfunded mandates, environmental review of new development, and much more. Taught by a current sitting mayor, the course will be fully engaging, with a great deal of questions and answers, and participation in a mock City Council meeting. By the end of the course, students will have gained a deeper understanding of how local governments work and how they can be a force for public good.

SCI 06: Photographing Nature

This course will utilize the idiom of photography to help students learn about nature, enhance their powers of observation, and better understand scientific concepts. The course builds upon the pioneering photographic work of Eadweard Muybridge (1830–1904), who used the camera to answer scientific questions about human and animal locomotion. (His work, incidentally, was funded by Leland Stanford Senior). A secondary goal will be to discuss the grammar, syntax, composition, and style of nature photography to enhance the use of this medium as a form of scientific communication. Some of the scientific themes to be explored include change across time and space, taxonomy, habitat preservation; weather and climate change; species diversity; survival and reproductive strategies; ecological niches and co-evolution; carrying capacity and sustainability; population densities, predator-prey relationships; open-space management; and the physics of photography. We will make use of the abundance of local areas that preserve and showcase nature (the course includes optional field trips to Jasper Ridge, Año Nuevo, the Stanford Dish, the Palo Alto Baylands, and the Stanford Arizona Garden). Assignments will have a photographic and a written component, and students will need a digital SLR camera.

SCI 36: The History of Food and Nutrition

The history of food is the history of life. Starting with an introductory discussion of the history of life and the evolution of Homo sapiens and its diet, the lectures in this course will cover the history of human food consumption from the time of hunter-gatherers to the development of agriculture, continuing with the great civilizations of Western antiquity—Mesopotamia, Egypt, Classical Greece, Rome—and moving into the Middle Ages. It will continue with the dramatic changes that took place in the world's diet as a result of the Columbian Exchange, and then explore shifts in eating habits after the Renaissance, the development of recipe books, the



appearance of restaurants, and the industrialization of food in modern times. Finally, we will explore the recent origin and development of the science of nutrition, and the gigantic advances it made in the 20th century. Students will learn the difference between omega-3 fatty acids and trans fatty acids, what the necessary minerals and vitamins are, how they were discovered, why vitamin D is a very important hormone and not a vitamin, and more.

SSU 105: Stanford Saturday University at Hopkins Marine Station, Monterey

Lectures include: *Next Generation Ocean Observatories* - Chris Scholin, President and CEO, Monterey Aquarium Research Institute; *Where the Wild Things Used to Be: The Stories We Tell About Endangered Species and Why They Matter* - Ursula Heise, Professor of English, Stanford; Fellow, Institute of the Environment and Sustainability, UCLA; *Informal Tour of Hopkins Marine Station*; *War and Morality: The Ethical Challenges Raised by New and Emerging Military Technology* - Bradley Strawser, Assistant Professor of Philosophy in the Defense Analysis Department, Naval Postgraduate School; *Shark and Awe: The Extreme Life of the Sea and What It Tells Us About the Ocean's Future* - Stephen Palumbi, Jane and Marshall Steel Jr. Professor in Marine Sciences, Stanford; Senior Fellow, Woods Institute for the Environment; Director, Hopkins Marine Station; *Searching for King Solomon: A Real Life Adventure on the Seven Seas* - Steven Weitzman, Daniel E. Koshland Professor in Jewish Culture and Religion, Stanford.

WSP 190: California Coastal Photography: From the Monterey Peninsula to Big Sur

The California coastline stretching from Monterey to Big Sur is a natural collage of bold headlands and beaches strewn with rugged stone, brightly colored aquatic plants, and sand. For decades, the natural beauty of this place has played an important role in the evolution of modern photography, inspiring such masters as Ansel Adams, Edward Weston, and Imogen Cunningham.

This workshop begins with a full-day class session on the Stanford campus where we will cover topics related to outdoor photography, including understanding light, modifying light with reflectors and flash, lens selection from wide-angle to telephoto to macro, effective composition, and how digital tools can expand our photographic repertoire. In the field on the Monterey Peninsula on days two and three, we will sharpen our photographic skills at the famed tide pools of Point Lobos and spots along the dramatic Highway 1 coastline between Carmel and Big Sur. With a thoughtful blend of guided and independent photographic shoots carefully choreographed with the low tides to allow for macro and wide-angle opportunities, this workshop will offer valuable resources for the novice and experienced photographer alike. After the field sessions, there will be a final class meeting to review student work. This workshop is for students of all levels although some prior experience with photography and computers is expected.

XEIET 132: Solar Cells

Photovoltaic cells (also known as solar cell) are used to generate electricity in residential, commercial, utility and off-grid sectors. In this course students will learn how solar cells work and explore the latest advances in photovoltaic technology. The class will compare silicon, cadmium



telluride, copper indium gallium selenide, gallium arsenide, organic, dye-sensitized and multifunction solar cells. Students will evaluate the relative effectiveness of these different materials and examine how costs compare both to each other and to other sources of energy. Students will also explore opportunities for career advancement in this renewable energy field.

XEIET 135: Producing Natural Gas from Shale

Shale gas and the process of extracting it have received increased media attention as the world clamors to take advantage of this new energy source. Significant quantities of natural gas can be produced from shale rock formations found throughout the world. Because natural gas is both flexible and much cleaner than other fossil fuels, it has the potential to transform energy use globally. Yet significant challenges are associated with natural gas development. These include minimizing the impact of shale gas development on the environment and communities. This course will address fundamental geologic, geophysical and reservoir engineering issues associated with shale gas development as well as outstanding research questions.

XEIET 136: Development of Cellulosic Biofuels

Developing more productive ways of converting plant sugars to fuels could have a significant impact on our energy supplies. The current method of accomplishing this for many biofuels used today — such as ethanol and biodiesel — is similar to the centuries-old fermentation practices relied on to make beer and wine. While those methods are successful for spirits, they've proved inadequate in the production of biofuels, especially on the large scale that is needed. In this class you will learn why biofuel research is important, how it has evolved, and how researchers are attempting to boost the concentration of fuel produced by the biofuel fermentation process using alternative crops. Doing so could significantly shrink the cost of making biofuel, causing a surge in demand for this environmentally friendly substance.

XEIET 137: Smart Grid: Sensing, Data Analytics and Control

Many countries set aggressive goals to reduce greenhouse gas emissions, and renewable energy production has increased exponentially as a result. Yet renewable energies are extremely variable, making it hard to predict how much power they will produce at any given time. Smart grids counteract variability by providing more accurate information, more refined control, and tighter feedback. This course teaches the fundamental components of smart grids including sensing, data analytics and control. Learn how to optimize smart grids so they are cost effective and efficient, how to increase grid reliability, and how to measure performance through data analytics. Explore how monitoring and modeling can improve forecasting and provide critical data for decision making. Develop an understanding of the information and communications technology that enable the expanding field of smart grids.

XEIET138: Solar Fuels

Fossil fuels are an impressive source of energy due in part to their high power density and stable chemistry. What if we could create a sustainable alternative by converting solar energy into the form of fuels? There are numerous challenges involved, bridging materials science, chemistry,



physics, and chemical engineering. This course will focus on the development of three key components needed to synthesize liquid and gaseous fuels from sunlight: electro-reduction catalysis, water oxidation catalysis, and solar-photon absorbing semiconductors. We will explore these methods and analyze their cost-effectiveness. We will also discuss how nano-scale manipulation can tailor material surfaces and bulk properties to fit these applications and reduce costs.

XEIET 139: Batteries

Batteries are a common source of energy for households and industry. Yet battery technology has evolved only moderately compared to many other technologies. Nonetheless, batteries are a critical player in a renewable energy future due to their portability, and there is a great demand for low-cost, high performance batteries. The development of nanotechnology offers exciting opportunities for energy storage. In this class you will learn about the latest research in this field. For example, Si nanowires directly grown on metal collector substrates can result in 10 times higher specific charge capacity than existing lithium ion battery technology. You will explore the principals of batteries as well as their real and potential applications in a variety of products. Batteries are such an important energy source that with each incremental improvement, many new products and enhanced applications are possible.

XEIET 200: Planning for a Sustainable Future with Wind, Water and the Sun

Global warming, air pollution, and energy insecurity are three of the most significant problems facing the world today. Solutions to these problems invariably require a large-scale conversion of our energy infrastructure. This course will provide you with proven methods and techniques to develop and evaluate strategies for changing the infrastructure at the local, regional, and global levels to provide a healthy and sustainable future.