

The Earth Institute Center for Environmental Sustainability

Executive Education Program

Fall Semester 2017 Course Descriptions

MODULE 1

September to October

Climate Change: Dynamics, Drivers, and Decisions

Instructor: Dr. Tiff van Huysen

Fulfills requirement: Environmental Policy, Management, and Finance (EPMF)

Day: Monday

Dates: Sept. 11, 18, 25, Oct. 2, 9 (Module 1, 5 sessions)

Time: 6:10 – 8:10 PM

Course ID: ENVB 0336 N

Call number: 92089

Course Description

New course!

Last year was a yet another record-breaker with changes in our global climate system reaching unprecedented highs and lows. In 2016, land, ocean, and atmosphere temperatures were the highest on record; global sea level rose to a record high; Antarctic sea ice extent was observed to be at a record low; and for the first time, the concentration of carbon dioxide (CO₂) in the atmosphere exceeded 400 parts per million (ppm). In addition to these record observations, other climate indicators such as precipitation, snow and ice cover, and ocean heat content demonstrated trends consistent with a rapidly changing climate system.

The impacts of climate change impact all three domains of sustainable development (environmental, social, economic), vary spatially and temporally, and differ across human and non-human populations. Deemed the greatest challenge that humanity faces, climate change poses an existential threat to our livelihoods and the rest of the biosphere. Yet, it is only by questioning how we exist in this world, how we live our lives, and how we relate to the resources we rely on that we can hope to address this challenge. This course will explore the physical science and drivers of climate change, mitigation and adaptation strategies, and policy frameworks intended to inform action on reducing the impacts of climate change. We will address questions such as: What is climate change? Why is the climate system changing? What are the consequences of a changing climate? How do we manage the risks of climate change? The underlying premise of this course is that human-induced climate change is real and observable; that is, climate change is happening and it is happening now.

About the Instructor

Dr. Tiff van Huysen has a PhD in ecosystem ecology and biogeochemistry. She recently returned to school to pursue her interest in working at the interface of physical and social science, graduating from the MA Program in Climate and Society at Columbia University in 2016. Her academic endeavors at Columbia University built upon her background in the physical and biological sciences while integrating studies of sustainable development, human rights, gender equality, and conflict and peacebuilding within the context of climate change and natural resource management. Tiff has over ten years of experience teaching and conducting research in the fields of botany, forest ecology, and soil science. More recently, she has served as a guest lecturer and teaching assistant for the MA Program in Climate and Society and the Summer Ecosystem Experiences for Undergraduates (SEE-U) agroecology class at Columbia University. She has served as a consultant for the ClimaSouth project to conceptualize and design a Center of Excellence for Climate Change in Egypt and as a consultant for the CGIAR Climate Change, Agriculture and Food Security (CCAFS) program to explore the intersection of gender, agriculture, and the provision of climate services. She is currently serving as a guest editor for the journal *Climate Risk Management* and as the Outreach and Operations Coordinator for The Earth Institute Center for Environmental Sustainability (EICES) Executive Education Program. Prior to returning to school to pursue her MA degree, Tiff worked for the United States Department of Agriculture (USDA) Forest Service for four years managing an applied research program designed to support restoration efforts in the Lake Tahoe Basin.

Environmental Economics

Instructor: Urvashi Kaul

Fulfills requirement: Fundamental (F)

Day: Tuesday

Dates: Sept. 5, 12, 19, 26, Oct. 3 (Module 1, 5 sessions)

Time: 6:10 – 8:10 PM

Course ID: ENVB 0353 N

Call number: 16248

Course Description

This course provides an introduction to environmental economics through a discussion of the basic principles of microeconomics as they apply to environmental issues and analysis of case studies that illustrate how economics can guide conservation practice and policy. Class discussions also includes a review of solutions to market failures, such as taxes and subsidies, fees and quotas, and tradable emissions permits (e.g., carbon markets).

About the Instructor

Urvashi Kaul is the Education Manager for RFK Compass. She works with the investment community to encourage the use of sustainability as an integral part of their strategies. Prior to joining RFK Compass in 2012, Ms. Kaul was an Assistant Director for Economic Research and Analysis at the New York City Economic Development Corporation, where she evaluated

economic and fiscal impacts of development projects and events, and analyzed policies and proposals related to New York City's economic development. She served as the standing advisor for the New York City Labor Market Information Service at the Center for Urban Research, City University of New York. Before that, she was an Economist for Fiscal and Budget Studies at the Office of the New York City Comptroller. Ms. Kaul is an Adjunct Assistant Professor of International and Public Affairs at Columbia University, where she teaches graduate level courses in Economics and Finance. She serves as the chair of the board of directors of Adhikaar, a New York based not-for-profit organization promoting social justice and human rights. She also serves as a member, board of directors of Asia Initiatives. A native of Kashmir, India, her education includes an MPA from Columbia University, with a concentration in International Finance and Economic Development; a Master's Degree from the Delhi School of Economics, University of Delhi; and an Undergraduate Degree from Miranda House College, University of Delhi.

Soil and Health: Soil, Seeds, and Sustenance*^

Instructor: Davis Lindsey

*The two evening sessions will be offered via webinar; however, students **MUST** attend the field session to receive a passing grade

^Sustainable Food Systems Track course

Fulfills requirement: Food, Ecology, and Environment (FEE) **OR** Case Study (CS)

Day: Wednesday and a Saturday field session

Dates: Sept. 20, Oct. 4 (Module 1, 2 sessions on Columbia Morningside campus)

Time: 6:10 – 8:10 PM

Field session: Saturday, Sept. 23 at Stone Barns Center for Food and Agriculture**

Time: 8:30 AM – 5:00 PM (departure and return times from/to NYC)

Course ID: ENVB 0389 N

Call number: 98149

**Transportation to Stone Barns Center provided; students will need to bring a lunch or plan to buy lunch at the center's cafe

Course Description

New course!

The treatment of chronic disease is the cause for 78 percent of healthcare expenditures in the United States. Research now points to diet as a major cause for such dysfunction. This relationship to food reflects a separation from the soil ecology that our farmers manage. This course will provide an introduction to soil science and the management practices used to create healthy habitat for annual food plants. It will provide you the basic tools for imagining what a farm-driven diet looks like in this region. And, it will introduce you to the value of seed genetics and its relationship to flavor, soil fertility, and human health. The case example will be the Stone Barns Center, a farm and education center that practices these very principles.

About the Instructor

Davis Lindsey is the Director of the Growing Farmers Initiative at Stone Barns Center. He studied environmental science at Yale and worked closely with the Nature Conservancy and the USDA during his thesis on the Conservation Reserve Program. He later worked for Rocky Mountain Institute on various energy and transportation projects.

His desire to understand our country's natural and cultural ecologies led him to the food industry, first as a farm apprentice in Connecticut and then through cooking opportunities and culinary school in New York at Blue Hill, Brushstroke, Pure Food and Wine, and the Natural Gourmet Institute. He was then accepted to apprenticeship programs first at Stone Barns Center and later at Four Season Farm in Maine. These experiences led him to a farm and program management role at Stone Barns Center and now to direct the Growing Farmers Initiative.

MODULE 2

October to November

Systems Thinking to Facilitate a Regenerative Economy

Instructor: Jeffrey Potent

Fulfills requirement: Environmental Policy, Management, and Finance (EPMF)

Day: Monday

Dates: Oct. 16, 23, 30, Nov. 6, 13 (Module 2, 5 sessions)

Time: 6:10 – 8:10 PM

Course ID: ENVB 0404 N

Call number: 21647

Course Description

This course introduces systems theory to advance the practice of sustainable development. We will explore how systems manifest in nature and in human society, and how systems thinking can complement more conventional analytic approaches to understanding the world around us. We will learn about knowledge systems, an approach to learning and collaboration that can achieve outcomes which are scientifically sound, relevant to the issues at hand, and respectful of the interests of all involved parties. From there, we will examine how knowledge systems are applied to sustainable development to address the complex challenges associated with balancing environmental, social, and economic objectives over time. Along this journey, we will have lively discussions about what a sustainable society might look like and the prospects of actually getting there.

About the Instructor

Jeffrey Potent develops and teaches courses in corporate sustainable development, systems theory, ecosystem services, and sustainable agriculture. He also consults and speaks publicly on corporate and agricultural sustainability and water quality. Mr. Potent formerly led corporate partnerships for the US Environmental Protection Agency (EPA), Office of Water in Washington DC, advancing sustainable and market-based approaches to environmental protection. Earlier in his career, he served as EPA/US Department of Agriculture (USDA) liaison, facilitating collaboration among Land Grant Universities, EPA, USDA, and other agencies and academic institutions. In 2001 he established the regional component of the USDA National Integrated Water Quality Program, serving as regional coordinator and member of the program's national leadership team. Before that, he led an energy and environmental engineering consulting practice, managed pollution prevention programs for a large environmental agency, and planned satellite and cable infrastructure for a global telecommunications corporation.

Ecology of Emerging Diseases

Instructor: Dr. Peter Daszak

Fulfills requirement: Case Study (CS)

Day: Wednesday

Dates: Oct. 18, Nov. 1, 8, 15* (Module 2, 4 sessions)

Time: 6:10 – 8:40 PM*

Course ID: ENVB 0306 N

Call number: 29595

*Class meets four times with longer sessions

Course Description

Why do pandemic diseases like AIDS., Ebola, influenza and SARS emerge? What causes them to 'spillover' from wildlife to people and spread so rapidly around the world? More than 60% of emerging infectious diseases that affect humans originate in animals and more than two-thirds of those originate in wildlife. Human processes that infringe upon previously uninhabited areas have the potential to profoundly affect our exposure to diseases around the world, causing millions of people to become infected, and costing billions of dollars each year. Yet health assessments rarely take into account the principles of disease ecology, the interaction of the behavior and ecology of hosts with the biology of pathogens. In this course you will gain an overview of the principles of disease ecology with an emphasis on the effect of disease on human, wildlife, domestic animal, and ecosystem health. We will explore the environmental and socioeconomic drivers behind the rise of Ebola, SARS, HIV and other devastating pandemics, and examine the impact of disease on biodiversity and rates of extinction.

About the Instructor

Dr. Peter Daszak is President of EcoHealth Alliance, a US-based organization which conducts research and outreach programs on global health, conservation and international development. Dr. Daszak's research has been instrumental in identifying and predicting the impact of emerging diseases across the globe. His achievements include identifying the bat origin of SARS, identifying the underlying drivers of Nipah and Hendra virus emergence, producing the first ever global emerging disease 'hotspots' map, identifying the first case of a species extinction due to disease, coining the term 'pathogen pollution', and discovering the disease chytridiomycosis as the cause global amphibian declines. Dr. Daszak is a member of the Institute of Medicine's Forum on Microbial Threats, the One Health Commission Council of Advisors, the CEEZAD External Advisory Board, and served on the IOM Committee on global surveillance for emerging zoonoses, the NRC committee on the future of veterinary research, the International Standing Advisory Board of the Australian Biosecurity CRC, and he has advised the Director for Medical Preparedness Policy on the White House National Security Staff on global health issues. Dr. Daszak won the 2000 CSIRO medal for collaborative research on the discovery of amphibian chytridiomycosis, is the EHA institutional lead for USAID-EPTPREDICT, and is Editor-in-Chief of the journal EcoHealth. He has authored over 200 scientific papers, and his work has been the focus of extensive media coverage, ranging from popular press articles to television appearances.

Agricultural Economics[^]

Instructor: Bipasha Chatterjee

[^]Sustainable Food Systems Track course

Fulfills requirement: Food Economics and Sustainability (FES) **OR** Case Study (CS)

Day: Tuesday (one session) and Thursday

Dates: **Tuesday, Oct. 17 (first session)**

Thursday, Oct. 19, 26, Nov. 2, 9 (as scheduled)

Time: 6:10 – 8:10 PM

Course ID: ENVB 0520 N

Call number: 79697

Course Description

This course takes an in-depth look at the causes of hunger and malnutrition, the economics of agricultural development and world food systems, the measures for achieving food security for all, and the future of agriculture and food systems under climate change. The course will rely on recent case studies to illustrate and analyze the underlying political and economic structures influencing these issues.

About the Instructor

Bipasha Chatterjee is an environmental economist and a policy consultant with post-graduate degrees from the University of Cambridge, UK and from the London School of Economics, UK.

She started her career with the Food and Agriculture Organization of the United Nations in Rome, Italy and went on to work as a governance reform consultant (KPMG and AEA GROUP) in the UK. She has extensive experience in working on environmental and climate change policy issues. She has led projects in the areas of climate change mitigation action, Kyoto Protocol and clean development mechanism (CDM), renewable energy-related research, and advisory work. She is currently an Executive Education Instructor for the Earth Institute Center for Environmental Sustainability teaching courses on Environmental Policy and Agricultural Economics. She also teaches BA and MA Environmental Economic courses at Hunter College, City University of New York & Roosevelt House Public Policy Institute.

MODULE 3

November to December

The World on Your Plate: Food, Equity, and Sustainability[^]

Instructor: Mia MacDonald

[^]Sustainable Food Systems Track course

Fulfills requirement: Food Systems (FS) **OR** Environmental Policy, Management, and Finance (EPMF)

Day: Monday

Dates: Nov. 20, 27, Dec. 4, 11, 18 (Module 3, 5 sessions)

Time: 6:10 – 8:10 PM

Course ID: ENVB 0408 N

Call number: 70945

Course Description

This course will provide an overview of the multiple and varied intersections among environmental and social factors involved in food production and consumption. The broad challenge and opportunity of sustainability requires such a multifaceted approach and deviates sharply from conventional, unsustainable approaches focused on single factors, such as yield. The course is about policy—its development as well as implementation. It will, however, also explore the roles of public understanding and collective and individual action in informing policies and changing practices.

About the Instructor

Mia MacDonald is the Executive Director and founder of Brighter Green. She is a New York based public policy analyst and writer who has worked as a consultant to a range of international non-governmental organizations—including the Ford Foundation, the World Wildlife Fund, the Green Belt Movement, the Sierra Club, and Save the Children, and several United Nations agencies, among others—on issues of environment, sustainable development, women’s rights and gender equality, reproductive health and population, and conservation and

animal protection. She has published many articles in popular and environmental media, authored a number of policy papers and reports, and contributed to four books, including Nobel Peace Laureate Wangari Maathai's best-selling autobiography, *Unbowed*. She is a Senior Fellow of the Worldwatch Institute and has taught in the human rights program at Columbia University's School of International and Public Affairs and the environmental studies department at New York University. She is a member of the board of directors of the Green Belt Movement International – North America (currently serving as treasurer, after four years as board chair) and the Culture & Animals Foundation, and has been a member of the boards of Farm Sanctuary and the Food Empowerment Project. She received a Master's degree in Public Policy from the Kennedy School of Government at Harvard University, a BA with honors from Columbia University, and also studied English Literature and Language at Oxford University.

Ecosystem Services

Instructor: Lisa Dokken

Fulfills requirement: Case Study (CS) **OR** Tools (T)

Day: Tuesday

Dates: Nov. 21, 28, Dec. 5, 12, 19 (Module 3, 5 sessions)

Time: 6:10 – 8:10 PM

Course ID: ENVB 0448 N

Call number: 96049

Course Description

New course!

Have you ever considered that the food you eat is brought to you by soil that has taken millions of years to build, or that the water you drink has been purified by the wetlands next door? Or how the trees in your neighborhood filter the air we breathe? Natural ecosystems perform fundamental life-support services upon which human civilization depends. Unless human activities are carefully planned and managed, valuable ecosystems will continue to be impaired or destroyed.

Although substantial understanding of many ecosystem services and the scientific principles underlying them already exists, there is still much to learn. What is the interconnection and interdependence of the many plant and animal communities within ecosystems? The tradeoffs among different services within an ecosystem, the role of biodiversity in maintaining services, and the effects of long-term and short-term disturbances are just some of the questions to be explored. The answers to such questions will provide information critical to the development of management strategies that will protect ecosystems and help maintain the provisions of the services upon which we depend. The choices we make today in how we use land and water resources will have enormous consequences on the future stability of earth's ecosystems and the services they provide.

About the Instructor

Lisa Dokken is a senior sustainability professional with broad experience in developing and managing innovative sustainable development programming across the globe, including over a decade working for the UN Development Programme implementing sustainable development programming in over 30 countries. Lisa lived and consulted in Asia and both North and South America for over 15 years in the built environment, conservation, policy analysis, strategy planning, and advocacy. Lisa holds a Master's in Public Policy and Administration from Columbia University and was one of the first to receive a Masters in Science in Biomimicry from Arizona State University in 2015.

Diversity and Conservation

Instructor: Dr. Matt Palmer

Fulfills requirement: Fundamental (F)

Day: Thursday

Dates: Nov. 16, 30, Dec. 7, 14, 21 (Module 3, 5 sessions)

Time: 6:10 – 8:10 PM

Course ID: ENVB 0300 N

Call number: 93645

Course Description

Human life and well-being are dependent on goods and services provided by nature. However, this natural capital is chronically undervalued and often poorly understood. Biodiversity – the variety of life on earth – supports many ecosystem functions and the loss of diversity can have both obvious and subtle consequences. This course explores the scientific issues related to the origin, distribution, and functions of biodiversity and the consequences of biodiversity loss. We discuss a range of tools for conserving biodiversity – including species recovery plans, protected area management, and ecosystem-based management

About the Instructor

Dr. Matt Palmer is a faculty member in the department of Ecology, Evolution and Environmental Biology (E3B) at Columbia University. His research interests are based in plant community ecology, with emphases on conservation, restoration and ecosystem function. Dr. Palmer has done research on the effects of microtopography and plant interactions on centimeter-scale diversity patterns in fens of the New Jersey Pinelands. He is currently conducting research on the community dynamics and ecosystem functions of urban forests and green roofs, the population biology of rare plants, and the effects of forest canopy disturbance on understory structure and function.