

The Earth Institute Center for Environmental Sustainability

Executive Education Program

Fall Semester 2019 Course Descriptions

MODULE 1

September to October

Environmental Economics*

Instructor: Urvashi Kaul

***Fundamental course required to complete the 12-course Executive Education Program**

Course number: ENVB 0353 N

Fulfills requirement: Fundamental (F)

Day: Tuesday

Dates: September 3, 10, 17, 24, October 1 (5 sessions)

Time: 6:10 – 8:10 PM

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 a MPA from Columbia University with a concentration in international finance

and economic development, a master's degree from the Delhi School of Economics at the University of Delhi, and an undergraduate degree from Miranda House College at the University of Delhi.

NEW!

Global Food Security, Global Oceans, and Local Climates[^]

Instructor: Dr. Indrani Pal

[^]Sustainable Food Systems Track course

Course number: ENVB 0411 N

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

Day: Wednesday

Dates: September 4, 11, 8, 25 (4 longer sessions)

Time: **6:10 – 8:40 PM**

Course Description

Global food security is crucial as food production, quality, and accessibility are all challenged by a changing environment and growing human demand. A substantial proportion of global food production depends on climate variability and many climates are influenced by the global oceans. This course will introduce the multi-disciplinary science needed to understand the relationships between climate and food security. Relying largely on peer-reviewed evidence, this course will cover a range of crucial topics, including the linkages between regional climates to global oceans, and local to global food networks. Using this knowledge, each student will perform a case study to gain in-depth knowledge that can be used to guide risk management decisions for a region of her/his interest. As the world warms and extreme weather events become more common, this course in its entirety will provide an interesting platform to learn about how the world oceans are important for global food security, which has major socio-economic and commercial importance at scales, underscoring the urgency of options in managing climate risk.

About the Instructor

Dr. Indrani Pal is a Research Assistant Professor and scientist at National Oceanic and Atmospheric Organization (NOAA) Center for Earth System Sciences and Remote Sensing Technologies at City University of New York. She holds an Adjunct Scientist position at Columbia Water Center, and a Lecturer position at the School of Professional Studies (SPS) at Columbia University where she teaches a number of graduate and undergraduate level courses such as Water Resources and Climate, Introduction to Statistics for Ecology, and Evolutionary Biology. Previously, Dr. Pal held an Assistant Professor position at University of Colorado, Denver. Her research focuses on investigating water resources risk, climate variability, and food system instability.

Dr. Pal comes from India with a background in Civil Engineering (India), M. Tech degree in Water Resources Engineering (Indian Institute of Technology Delhi and University of Stuttgart, Germany), an M. Phil in Environmental Engineering Sciences and Sustainability (University of Cambridge, UK)

and a PhD in Environmental Engineering Sciences and Sustainability (University of Cambridge, UK). She has received a number of prestigious national and international scholarships throughout in her career from sources such as the Indian Ministry of Human Resources, DAAD from Germany, UK Cambridge Commonwealth Trust, and an Overseas Research Scholarship from the UK. Dr. Pal received her postdoctoral training from the International Research Institute for Climate and Society at The Earth Institute, Columbia University.

Ecology of Emerging Diseases

Instructor: Dr. Peter Daszak

Course number: ENVB 0306 N

Fulfills requirement: Case Study (CS)

Day: Thursday

Dates: September 5, 19, 26, October 3 (4 longer sessions)

Time: 6:10 – 8:40 PM

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 animals, 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 (EHA), 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 severe acute respiratory syndrome (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 (IOM) Forum on Microbial Threats, the One Health Commission Council of Advisors, the Center of Excellence for Emerging and Zoonotic Animal Diseases (CEEZAD) External Advisory Board, and served on the IOM Committee on global surveillance for emerging zoonoses, the National Research Council (NRC) committee on the future of veterinary research, the International Standing Advisory Board of the Australian Biosecurity Cooperative Research Centre (CRC), and he has advised the Director for Medical

Preparedness Policy of the White House National Security Staff on global health issues. Dr. Daszak won the 2000 Australian Commonwealth Scientific and Industrial Research Organisation (CSIRO) medal for collaborative research on the discovery of amphibian chytridiomycosis, is the EHA institutional lead for the US International Development Agency Emerging Pandemic Threats (USAID-EPT) PREDICT project, 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.

MODULE 2

October to November

Introduction to Environmental Policy*

Instructor: Bipasha Chatterjee

***Fundamental course required to complete the 12-course Executive Education Program**

Course number: ENVB 0351 N

Fulfills requirement: Fundamental (F)

Day: Tuesday

Dates: October 8, 15, 22, 29, November 5 (5 sessions)

Time: 6:10 – 8:10 PM

Course Description

The past two decades have seen an increasing amount of attention given to the importance of environmental policy and planning in promoting a sustainable future for the planet. This course examines contemporary domestic and international issues that require environmental policy and planning solutions. It explores policy responses to local and global environmental problems such as biodiversity loss, air and water pollution, climate change, and environmental justice. The course examines how governments of advanced and developing countries, non-governmental organizations, the scientific community, and the private sector shape environmental policy through a wide range of economic, social, and political factors. Topics cover the history, evolution and the application of existing environmental policies in the world, change in the USA's and China's environmental regulation in recent years, international environmental treaties including Kyoto Protocol and the Paris Agreement, new clean energy policies, and incentives for the private sector for promoting sustainable technologies.

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 (EICES) 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, and Roosevelt House Public Policy Institute.

NEW!

Waste Worlds: Tracing Cycles, Resources, and Cultural Habits

Instructor: Tei Carpenter

Course number: ENVB 0412 N

Fulfills requirement: Environmental Policy, Management, and Finance (EPMF) **OR** Tools (T)

Day: Wednesday

Dates: October 16, 23, 30, November 6 (4 evening sessions)

Time: 6:10 – 8:10 PM

Field trip: **Saturday, October 19** from **10:00 AM – 12:00 PM** at Freshkills Park on Staten Island**

****Students are responsible for transportation to and from Staten Island; the NYC Department of Parks & Recreation will provide transportation between the ferry terminal on Staten Island and the park.**

Course Description

Waste is all around us—in overflowing garbage bins, accumulating in landfills and seeping into waterways—yet it is often overlooked as a site of inquiry. In today’s context of climate change and a time when material resources are becoming increasingly finite, this course will explore the importance of waste as a global system and unit of value. Through three thematic approaches to the topic titled Cycles, Resources, and Cultural Habits, students will gain an awareness of the topic as a transdisciplinary issue. In the Cycles session, students will trace the input and output cycles of waste as a system that are typically hidden from view, by investigating the circulation of global waste streams through readings and visualizations. The second theme of Resources will introduce students to new, innovative, and sometimes surprising approaches to material reuse and reformation of waste through readings, case studies and a guest lecture. Finally, the Cultural Habits session will combine readings with debate to consider strategies to address the problem of discard and accumulation along with its behavioral challenges.

About the Instructor

Tei Carpenter, American Institute of Architects (AIA) Associate member, is an architectural designer, educator, and founder of award-winning New York City–based design studio Agency—Agency, which was recently honored with the 2018 New Practices New York award by the AIA. Carpenter’s design and research has been supported by a number of organizations including the New York State Council on the Arts and BMW Mini. In 2019, Agency—Agency was included in the 100 best international architecture firms that represent a “radical cultural shift in architecture” by *Domus* magazine.

Carpenter is Assistant Professor at the University of Toronto and Adjunct Assistant Professor at Columbia University in the Graduate School of Architecture, Planning and Preservation (GSAPP) where she is the director of the Waste Initiative, an applied research and design platform. She holds a BA in Philosophy from Brown University and an Master of Architecture degree from Princeton University, where she was awarded the Howard Crosby Butler Traveling Fellowship in Architecture.

NEW!

Complex Bodies, Complex Ecosystems: The Global Challenge of Optimal Nutrition[^]

Instructor: Dr. Sharon Akabas

[^]Sustainable Food Systems Track course

Course number: ENVB 0413 N

Fulfills requirement: Nutrition and Hunger/Health (NHH) **OR** Case Study (CS)

Day: Thursday

Dates: October 10, 17, 24, 31, November 7 (5 sessions)

Time: 6:10 – 8:10 PM

Course Description

This course will use a systems approach and an evolutionary perspective to focus on what humans need to eat for survival and health. We will examine how and why sufficient and optimal diets can be obtained through a range of dietary patterns, and how those patterns were and are rooted in different geographic and cultural regions. Throughout the course, the environmental impact of a given dietary pattern will be considered, and where possible, the economic determinants of individual food intake will be reviewed. We will incorporate a lifespan perspective throughout the course. This course will also examine how a food system that is more sustainable can lead to a reduction in heart disease, obesity and diabetes, and lower carbon and water footprints.

About the Instructor

Dr. Sharon Akabas is the Director of the MS Program in Nutrition and Associate Director for Educational Initiatives at the Columbia University Medical Center Institute of Human Nutrition. Dr. Akabas' primary interests are in education of health professionals about the importance of nutrition as a modality in disease prevention and treatment. She works with professionals from almost all healthcare sectors to develop programs and curricula that focus on childhood obesity. These collaborations include organizing symposia for practicing health care professionals, working with community groups to develop obesity prevention programs, and working with a wide range of groups to identify, understand, and lessen bias towards overweight children and adults.

MODULE 3

November to December

Module 3 courses will not meet the week of the Thanksgiving holiday, November 25th – 29th, 2019.

NEW!

Renewable Energy and the Environment

Instructor: Romany Webb

Course number: ENVB 0414 N

Fulfills requirement: Environmental Policy, Management, and Finance (EPMF) **OR** Case Study (CS)

Day: Monday

Dates: November 11, 18, 2, 9, 16 (5 sessions)

Time: 6:10 – 8:10 PM

Course Description

In the Paris Climate Agreement, the international community agreed to limit global warming to less than 2 degrees Celsius, requiring global net greenhouse gas emissions to reach zero by 2050. This will require a fundamental transformation of the energy system, with low- and zero-carbon energy sources -- particularly renewables -- replacing fossil fuels in electricity generation, as well as in industry, transportation, and other sectors. For example, natural gas use will need to be replaced with biogas in industry, and liquid biofuels will need to replace oil in transportation and other applications. Recently however, renewable energy development has faced growing public opposition, primarily due to concerns about its negative environmental and health impacts. This course will explore the key risks associated with renewable energy projects, how those risks are currently managed, and what (if any) improvements may be needed. We will also discuss perceived risks and how they can and do impact renewable energy development. Case studies will be used to illustrate the challenges that can arise and participants will have the opportunity to brainstorm possible solutions. While the primary focus will be on the U.S., there will be some discussion of international topics.

About the Instructor

Romany Webb is an Associate Research Fellow at Columbia Law School and Senior Fellow at the Sabin Center for Climate Change Law. Romany's research focuses on climate change mitigation, exploring how legal and policy tools can be used to reduce greenhouse gas emissions and promote carbon sequestration. Much of her research focuses on the intersection of climate and energy, looking at options to minimize the climate impacts of energy development.

Prior to joining the Sabin Center, Romany worked at the University of California Berkeley Energy and Climate Institute, researching executive authority to combat climate change. Romany also completed a fellowship with the Kay Bailey Hutchison Center for Energy, Law, and Business at the University of Texas at Austin, where she researched energy policy. The fellowship followed several years working in private practice in Sydney, Australia.

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

Instructor: Mia MacDonald

[^]Sustainable Food Systems Track course

Course number: ENVB 0408 N

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

Day: Wednesday

Dates: November 13, 20, December 4, 11, 18 (5 sessions)

Time: 6:10 – 8:10 PM

Course Description

This course will provide an overview of the multiple and varied intersections among environmental, social, and ethical factors involved in global food production and consumption. The broad challenges and opportunities of sustainability, climate resilience, and biodiversity protection require a multifaceted approach, which deviates significantly from current, unsustainable models that focus on single factors like yield. A focus of the course will be animal agriculture. The course is about public policy—its development as well as implementation. It will, however, also explore the roles of public understanding and collective and individual action in changing practices.

About the Instructor

Mia MacDonald is the Executive Director and founder of Brighter Green, a public policy action tank based in New York that works at the intersection of issues related to the environment, animals, and global development. She conceives and manages Brighter Green's research and program implementation, including in the area of food policy and equity. She is a public policy analyst and writer who has during her career worked as a non-profit program manager and 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 several United Nations agencies, among others. 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 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, the Culture & Animals Foundation, and the Africa Network for Animal Welfare. 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.

Diversity and Conservation*

Instructor: Dr. Matt Palmer

***Fundamental course required to complete the 12-course Executive Education Program**

Course number: ENVB 0300 N

Fulfills requirement: Fundamental (F)

Day: Thursday

Dates: November 14, 21, December 5, 12, 19 (5 sessions)

Time: 6:10 – 8:10 PM

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.