

Earth Institute Certificate Program in Conservation & Environmental Sustainability
SPRING 2016 COURSES

MODULE 1

Digital Markets & Public Relations in Environmental Sustainability

Brian Kateman, President of Reducetarian Foundation and Innovation Manager at The Good Food Institute

How can digital technology help secure a more sustainable planet? Effective mass communication is going to play a critical role in the months and years ahead. This highly hands-on course takes marketing and public relations to new levels by providing practical lessons in how best to navigate communications in strategic ways. Learn about the development of social media, where it is headed in the future, new ideas and trends and how to bring attention and traffic to enhance your work (and that of others) in protecting our planet. Discover principles of persuasion and influence and tips on what to avoid in this fast-changing Web 2.0 world. Become conversant in using social media (Facebook, Twitter, LinkedIn, YouTube), paid online advertising tools (Google Adwords), website design (Squarespace), email management, (MailChimp), and public relations; learn how each can be used for environmental change and sustainability. Case studies (including the reducetarian movement) illustrate how to put environmental issues in the mainstream and how to attract large and diverse audiences when digital media and public relations are used effectively. ****Not Available via Distance Learning****

Brian Kateman is Co-Founder and President of the Reducetarian Foundation (RF), where he oversees the day-to-day operations of the organization. A TEDx speaker and leading expert on the food system, he has appeared in hundreds of media outlets including The Huffington Post, National Geographic, Los Angeles Times, Fox News and The Daily Mail. In addition to his work for RF, Brian is Innovation Manager at The Good Food Institute, where he focuses on supporting the work of early stage companies and expanding the pipeline of startups. Brian received a Master of Arts in Conservation Biology from Columbia University and a Bachelor of Science from the Macaulay Honors College at The City University of New York.

Mondays, Jan. 25, Feb. 1, 8, 15, 22 (5 sessions, 6:10-8:10PM)

Scenarios for a Sustainable World

Cary Krosinsky, Executive Director, Network for Sustainable Financial Markets (NSFM)

Climate change, habitat loss, and population growth are dramatically reshaping life on Earth. Human activities are pushing the Earth toward environmental 'tipping points' that could cause sudden, irreversible changes to our planet. Learn the causes behind these issues and examine future scenarios that can help us best avoid potential global environmental tipping points. Featuring prominent speakers from corporations, investment houses, and NGOs this course addresses key questions such as:

- Can finance and investing be a part of the solution?
- How can companies be more involved to drive solutions and what are they already bringing to the table?
- What role do governments and other global bodies have to play?
- What happens if we do nothing or instead choose only incremental change as a way forward?
- What does dramatic change look like? Do we now need to consider dire choices? And what are they?

Topics include: stakeholder analysis, portfolio and asset allocation construction, differences between short and long term goals for organizations, and how current behaviors to drive solutions may be counterproductive.

Wednesdays, Jan. 20, 27, Feb. 3, 10, 17 (5 sessions; 6:10-8:10PM)

Cary Krosinsky is a well-regarded author, editor, educator & advisor on sustainability issues. His books on sustainable investing are contemporary standard texts used in classrooms on this subject, including 2008's Sustainable Investing: The Art of Long Term Performance and 2011's Evolutions in Sustainable Investing, both with Nick Robins, he writes and edits on Sustainable Investing for About.com and the Journal of Environmental Investing, and is co-author of the recent A New Vision of Value report from KPMG. His teaching includes a Residential College Seminar at Yale, and MBA courses at the University of Maryland's Robert H. Smith School of Business and he is a Senior Advisor to the University of Cambridge's Investment Leaders Group representing over \$5T of assets under management. He also worked closely on the recent Value Driver Model in late 2013 for the UN Global Compact, is Executive Director of the Network for Sustainable Financial Markets, Co-Founder of the Carbon Tracker Initiative, Sustainability Advisor to RLP Wealth Advisors, Global Chairman of ET Index and is a former Senior Vice President for Trucost in North America, having helped develop the Newsweek Green Rankings.

MODULE 2

Sustainable Agriculture

Jeff Potent, Adjunct Professor, School of International and Public Affairs, Columbia University
Climate change, habitat and biodiversity loss and eutrophication, among other concerns, have raised interest in and encouraged practices to minimize the environmental footprint and social impact of modern agriculture. Innovative approaches are emerging from all sectors of the established agricultural industry, as well as from new entrants and from a diverse array of agricultural stakeholders. While these approaches are emerging in response to a common set of issues, each is manifesting in diverse ways in response to unique perspectives, objectives and conditions. This course profiles the range of these and related approaches to sustainable agriculture. We explore emerging trends, obstacles, anticipated outcomes and the inherent contradictions and controversies surrounding the leading approaches. We engage in lively discussions on the scope of the significant challenge that lies ahead and seek to uncover cause for optimism.

Tuesdays, Feb. 23, Mar. 1, 8, 22, 29 (5 sessions, 6:10-8:10PM)

Dr. Jeff Potent 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.

Climate and Biodiversity

Shahid Naeem, PhD, Director, Earth Institute Center for Environmental Research and Conservation (EICES); Professor of Ecology, Evolution and Environmental Biology, Columbia University
Life on Earth is often perceived as a passive player in world events, but nothing could be further from the truth. The Earth's climate, for example, has been strongly regulated by life for over 3.5 billion years, and its current change is as much a function of life on Earth as it is of greenhouse gas emissions. This course explores the biosphere from a unique perspective, one in which climate is understood as a function

of plants, animals and microorganisms. It goes beyond the conservation problems of mass extinction (e.g., the loss of polar bears and penguins) and shifting biogeography (e.g., the northern migration of species on a warmer planet) and considers how biodiversity conservation is also critical to managing and adapting to climate change.

Wednesdays, Feb. 24, Mar. 2, 9, 23, 30 (5 sessions, 6:10-8:10PM)

Dr. Shahid Naeem is the Director the Earth Institute Center for Environmental Sustainability (EICES). He oversees the development of research science programs that benefit from the combined resources of the Consortium for Environmental Research and Conservation. For example, he is currently leading center partners to actively develop programs for adapting conservation to climate change, which requires basic research in partnership with institutions that study the diversity of plants and animals, and is engaged in conservation activities around the world. Naeem studies the ecological and environmental consequences of biodiversity loss. He is interested in how changes in the distribution and abundance of plants, animals and microorganisms affect ecosystem functions and, by extension, how ecosystem services are affected. His current fieldwork includes American northeastern deciduous forests, Inner Mongolian grasslands in China and African agro-ecosystems. He is actively involved in bringing the science of biodiversity and ecosystem function to conservation, restoration and policy development. He is author, co-author and editor of over 100 scientific publications and co-chaired the UN Millennium Assessment's Biodiversity Synthesis Report published in 2005. Naeem is also a professor of ecology in Columbia University's Department of Evolution, Ecology and Environmental Biology. He received his Ph.D. from the University of California, Berkeley; was a postdoctoral fellow at Imperial College of London, the University of Copenhagen and the University of Michigan; and served on the faculties of the University of Washington and the University of Minnesota before coming to Columbia in 2003.

Evolution: Darwin to DNA

Sergios Orestis Kolokotronis, PhD, Assistant Professor of Biological Sciences at Fordham University; Adjunct Assistant Professor at New York University; and a Research Associate in Evolution Genomics at the American Museum of Natural History

Are Darwin's findings still relevant today? How could he have come up with the idea of evolution through natural selection if he did not know about DNA or how heredity works? And how did heredity work, again...? Now that we have decoded the human genome, what do we know – and still don't – about life? This course will lead students on a broad exploration of evolutionary science, seeking to answer questions such as these, among many others. We will review the history of evolutionary thought and science, genetics and heredity, the main mechanisms by which evolution acts, and the tools and findings of evolutionary research, including the evolution of humans and microbial pathogens.

Thursdays, Feb. 25, Mar. 3, 10, 24, 31, (5 sessions, 6:10-8:10PM)

Dr. Sertios Orestis Kolokotronis is an Assistant Professor of Biological Sciences at Fordham University; Adjunct Assistant Professor at New York University; and a Research Associate in Evolution Genomics at the American Museum of Natural History. As the Principle Investigator of the Kolokotronis Lab at Fordham University, Dr. Kolokotronis' research group focuses on molecular evolution of biological diversity where they employ modern tools drawn from genomics and bioinformatics to investigate the temp and mode of evolution leading to adaptation of organisms to their environment. He has co-authored numerous scientific publications and served as a research assistant at the American Museum of Natural History and the New York Botanical Gardens. He received his Ph.D., MPhil, and MA in Ecology and Evolutionary Biology from Columbia University; and was a post-doctoral fellow at the American Museum of Natural History.

MODULE 3

Introduction to Environmental Policy

Bipasha Chatterjee, Adjunct Lecturer, CUNY Hunter College

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. Explore policy responses to local and global environmental problems such as biodiversity loss, clean air and water, and climate change. Examine how governments of industrial 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 include environmental law, economics, human population growth, and public health.

Mondays, Apr. 11, 18, 25, May 2, 9 (5 sessions, 6:10-8:10PM)

Bipasha Chatterjee is an environmental economist. She has extensive experience 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 in the United Kingdom as a public sector consultant at AEA Technology (currently known as Ricardo-AEA). She is currently teaching the Environmental Economics and the Urban Economics courses (MA & BA) at Hunter College, City University of New York. Bipasha is qualified in Development Economics and Environmental Policy and Regulation from the University of Cambridge, UK and the London School of Economics, UK.

Biomimicry: Innovation Inspired by Nature

Lisa Dokken, Environmental Program Manager at PCI Media Impact

Biomimicry is the conscious emulation of nature's genius. It is an interdisciplinary approach that brings together two often disconnected worlds: nature and technology, biology and innovation, life and design. The practice of biomimicry seeks to bring the time-tested wisdom of life to the design table to inform human solutions that create conditions conducive to life. At its most practical, biomimicry is a way of seeking sustainable solutions by borrowing life's blueprints, chemical recipes, and ecosystem strategies. At its most transformative, biomimicry connects us in ways that fit, align and integrate the human species into the natural process of Earth.

Wednesdays, Apr. 6, 13, 20, 27, May 4 (5 sessions, 6:10-8:10PM)

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, North and South America for over 15 years in the built environment, conservation, policy analysis, strategy planning and advocacy. Lisa will be one of 20 professionals who will be conveyed the first Masters in Science in Biomimicry and Design from Arizona State University in the fall of 2015.

Forest Management and Conservation

Matt Palmer, PhD, Senior Lecturer in Discipline, Department of Ecology, Evolution and Environmental Biology (E3B), Columbia University

Forests are a vitally important habitat for much of the world's terrestrial biodiversity. They are sources of goods, such as timber and food, and provide services, such as carbon storage and water filtration. However, forests worldwide are threatened by overexploitation, conversion, climate change, and invasive species. Learn key issues in forest ecology and management through the local environment of Black

Rock Forest. Participate in an all-day field trip to Black Rock Forest to study how pathogens and other invasive species affect forest structure and function. Local observations are scaled up to consider how these issues affect forest conservation on a global scale. ****Not Available via Distance Learning****
Thursdays, May 5, 12 (6:10-8:10PM) & Saturday, May 7 (9AM-4:30PM; includes travel to and from Black Forest) – 3 sessions total

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. Palmer has done research on the effects of microtopography and plant interactions on centimeter-scale diversity patterns in ferns of the New Jersey Pinelands. He is currently doing 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.

MODULE 4

Environmental Justice & Sustainability

Instructor: Tomas Garduno

This course will explore the question “Is Environmental Sustainability possible without Environmental Justice?” The focus will be on environmental racism in the USA and internationally and uncover the relationship between race and the environment, and whether or not environmental sustainability can be achieved in a racially biased society. Through case studies, the course will assess the current state of environmental sustainability, and attempt to determine the causes of the current state of the environment. The course will also assess the current state of racial equality in these same locales. By overlaying these two assessments we will attempt to determine whether there is a causal, corollary, or no relationship whatsoever between race and the environment. To be able to determine the relationship, the course will also explore two key concepts: environmental racism and externalization of cost.

Wednesdays, May 11, 18, 25, June 1, 8 (5 sessions, 6:10-8:10PM)

Tomás Garduño is a social justice organizer with over 15 years’ experience in the social justice movement. Tomás played key roles in several significant moments of the social justice movement, including the anti-globalization protests against the WTO in Seattle in 1999; The People’s Climate March and many grassroots environmental and economic justice campaigns in Portland, OR, Albuquerque, New Mexico and Brooklyn, New York. He has worked for Western States Center, Community Alliance of Tenants, ‘ROOTS! Reclaiming Our Origins Through Struggle, Southwest Network for Environmental and Economic Justice, the SouthWest Organizing Project (SWOP), ALIGN: Alliance for a Greater New York. Tomás is currently coaching 6 social justice organizations around the country.

Ecological Restoration & Wildlife Conservation in NYC: Green Gotham

Simon Bird, PhD, Advising Dean, Columbia University; Adjunct Professor, New York University

This course provides an overview of ecological restoration and wildlife conservation initiatives in action throughout New York City. Field visits to a selection of diverse, high profile sites of environmental significance introduce the key challenges and benefits associated with restoring native vegetation, mitigating pollution impacts, fostering environmental stewardship, enhancing wildlife habitat, and providing outdoor environmental education opportunities across the five boroughs. Students learn unique characteristics of urban ecological systems; relationships between natural resources, anthropogenic activities and human welfare; and how general and specific approaches to land and natural resource

management can help improve quality of life in urban settings. Coursework provides an opportunity to further develop a sense for how scientific knowledge and ecological concepts can be applied to conservation practice. Field visits illustrate examples of complex, multi-scale projects and programs that aim to improve air quality, water quality, biodiversity, invasive species control, and recreation resources. Each trip provides a unique perspective on how different agencies and organizations collaborate towards common conservation and restoration goals. The series as a whole builds towards a broad overview of those efforts across the city. ****Not Available via Distance Learning****

Saturdays, May 14, 21, June 4, 11 (4 sessions, 2.5 hours each; 12:00PM-2:30PM)

Dr. Simon Bird is an ecologist and conservation biologist currently working as an advising dean at Columbia and adjunct professor in Liberal Studies at NYU. His research and teaching interests focus on land use ecology, urban ecology, invertebrate biodiversity, and soil system dynamics. He has two decades of experience teaching college-level ecology, conservation biology, entomology, and environmental science, and has a diversity of field experience in urban, desert, forest, grassland, coastal, and upland ecosystems. He received his B.Sc. (hons) from the University of Leeds in Zoology and a Ph.D. in Insect Ecology from Texas A&M University. Simon hails from northern England but is now a firmly-adopted Manhattanite.