



CLIMATE CHANGE: LEARNING FOR ACTION

Climate Change: Learning for Action is both a course and much more: It is an interactive, multi-media journey into collective problem-solving around one of the greatest challenges of our time. This learning experience will help you develop the knowledge, and the critical thinking, analytical and collaborative skills you need to work on climate mitigation and adaptation/resilience anywhere in the world. This course will also scaffold, support and structure your transition into a climate career, if that is your goal.

Intended Audience This course is ideal for any professional looking to leverage their existing experience and skills for the purpose of solving climate change. Prerequisites include a high-school level proficiency in science and math, and a willingness to work in teams on challenging assignments.

Course structure

- The course is 100% online, and features a multi-media format combining text, videos, infographics and slideshows.
- It is group-based, with 20-25 students in a group.
- All groups are taught by a live instructor who is available to students via Zoom, Slack and email.
- The format is highly interactive with a Slack chat space built into the platform.
- The course features 8 guest expert live talks, which will also be available for non-synchronous viewing. Fellows will have the opportunity to interact with all guest speakers.
- The course runs for 12 weeks, with regular release of “classes” (multi-media contents) twice every week, plus some built-in breaks for personal projects and catch-up time.
- Students should expect to commit approximately 8-12 hours/week.
- The course includes multiple mini-assignments within every class, and two team assignment projects over the 12 weeks as well as seven individual assignments (3 are optional). All assignments are designed to help you build your “climate portfolio,” while also helping to cement key concepts, develop your analytical and communications skills, and enhance collaborative learning and problem-solving.
- In addition to assignments, there are personal reflection activities that lead up to a final climate action work plan that you will develop and share during the course “graduation” event.
- The course culture is grounded in collaboration, mutual support and kindness. There will be many opportunities for peer support, and peer-to-peer learning.

- There are no grades; the requirements for “graduation” are active participation and completion of all assignments with sincere effort.

Class topics by week

Note that guest talks, office hours, and social sessions are spread throughout the weeks. These topics only refer to the non-synchronous class materials that will be released bi-weekly. When you are admitted, you will receive a detailed calendar of all events that you can add to your Google Calendar.

| Week | Class 1 | Class 2 |
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| 1 | <p><i>Introduction and orientation</i></p> <ul style="list-style-type: none"> • Meet your faculty • What you can expect • What we expect from you • Course logistics • Assessments • Your assignment today | <p><i>Climate Science 1: Earth’s energy balance, greenhouse effect and greenhouse gases, radiative/climate Forcing</i></p> <ul style="list-style-type: none"> • Doing climate science • Simple climate model • Unpacking the model & greenhouse effect • Radiative/climate forcing • We are the villains: emissions |
| 2 | <p><i>Climate Science 2: The work of climate scientists, the role of observations and statistics, intro to climate models</i></p> <ul style="list-style-type: none"> • Earth’s temperature • Observations in climate science • Stats workshop: CO₂ and Temp. relationship • Climate models • Uncertainty is not inaccuracy • Organizations doing climate science | <p><i>Climate Science 3: Global Warming Potentials, the global carbon cycle, emissions, stocks, and concentrations, climate sensitivity</i></p> <ul style="list-style-type: none"> • Global warming potential • Global carbon cycle • Stocks, flows and concentrations of emissions • Climate sensitivity |
| 3 | <p><i>Understanding global impacts: Why 1.5C, global impacts today, tipping points, global carbon budget, shared socio-economic pathways</i></p> <ul style="list-style-type: none"> • 1.5C—the safe threshold • Time lag in warming • Global impacts today • Global carbon budget • Shared socioeconomic pathways • Tipping points | <p><i>Local events and climate change: Extreme event attribution and unpacking media narratives</i></p> <ul style="list-style-type: none"> • Science of extreme event attribution • What is a disaster • Zooming out: cumulative impacts • Communicating impacts through stories • What’s going to happen to my home? |

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| 4 | <p><i>Catch-up break + guest sessions + self-assessment</i></p> | <p><i>Climate change and development:</i> Exploring creative models that work for humans and the environment Exploring pathways and models for sustainable development:</p> <ul style="list-style-type: none"> ● Sarvodaya Shramadana Movement (Sri Lanka) ● Green New Deal (U.S.) ● Sustainable Development in Costa Rica ● Doughnut Economics |
| 5 | <p><i>Economics of climate change:</i> Market failure model vs. other perspectives, a critical review of the social costing of carbon, carbon markets and pricing</p> <ul style="list-style-type: none"> ● Law of supply and demand ● Climate change as market failure ● Policy options for climate change ● Carbon markets and critiques ● Social cost of carbon | <p><i>Global climate politics and justice:</i> Global negotiations, global political movements, fairness and justice</p> <ul style="list-style-type: none"> ● Global negotiations and the Paris Agreement ● Politics, Policies and Justice ● Who is responsible? Countries ● CBDR-RC ● Emissions gap ● Who is responsible? Rich vs. poor ● Who is responsible? Corporations ● Grassroots EJ movements |
| 6 | <p><i>A systems perspective on mitigation:</i> En-ROADS workshop by Climate Interactive</p> <p>Fellows engage in using the En-ROADS simulation tool in a 1-hour session facilitated by a Climate Interactive ambassador</p> | <p><i>Energy and climate change 1: Context and concepts:</i> Energy and power, global energy challenges and opportunities, renewable energy technologies, quantitative analysis in clean energy</p> <ul style="list-style-type: none"> ● Energy in the context of CC and development ● Energy basics 1: intro to energy and power ● Energy basics 2: efficiency and capacity factor ● Introduction to electricity ● Clean energy solutions |
| 7 | <p><i>Energy and climate change 2: Economics, the smart grid and deep decarbonization pathways</i></p> <ul style="list-style-type: none"> ● Energy Economics ● The Smart Grid ● Pathways to deep decarbonization: electrify everything | <p><i>Clean energy transitions: Case studies from Hawaii and India (optional)</i></p> <ul style="list-style-type: none"> ● Planning a transition to 100% clean energy in Hawaii w/ Dr. Matthias Fripp ● India's energy future and key leapfrogging opportunities w/ Dr. Amol Phadke |

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| 8 | <p><i>Mitigation workshop—evaluation of other sectors:</i> Transportation, agriculture, manufacturing, industry, ocean solutions, social levers</p> <ul style="list-style-type: none"> • Class dedicated to creating research briefs on various sectors in teams of 2-3 | <p><i>Carbon sequestration:</i> Natural options: forestry and REDD+, regenerative agriculture. Technological options: DAC, geoengineering, other technologies</p> <ul style="list-style-type: none"> • Natural C-sequestration • REDD+ • C-seq. with regenerative agriculture • Technology-based c-seq |
| 9 | <p><i>Carbon offsets:</i> Overview, critiques, challenges and opportunities + case studies</p> <ul style="list-style-type: none"> • What are offsets? • Challenges w/ offsets • Offsets actors and case study • Future of offsets and alternatives | <p><i>Climate Finance 1:</i> Investing in climate action: Trends, opportunities and challenges</p> <ul style="list-style-type: none"> • The paradox of finance • The basics: what is finance? • Trends in climate finance • Green finance case studies • Profile: the green climate fund • Green bonds • Issues and challenges with climate finance • Benefits of climate finance |
| 10 | <p><i>Climate Finance 2:</i> Climate risk management and mitigation</p> <ul style="list-style-type: none"> • Climate risks to finance: an overview • Physical climate risks • Integrating physical risks into finance • Who will really pay? • Stranded assets: public finance • Who will pay for stranded assets? • The human costs • The future of finance in context of climate change | <p><i>Climate Adaptation and Resilience:</i> concepts and toolkit for practice</p> <ul style="list-style-type: none"> • Resilience: an overview • Types of resilience • Important concepts in resilience thinking • Social-ecological resilience • Steps for building resilience • A framing cycle • Operationalizing resilience • Case studies • Principles for building resilience |
| 11 | <p><i>Climate communications:</i> Exploring approaches that work</p> <ul style="list-style-type: none"> • How to engage: cognitive science and psychology foundations • Climate communications case studies • Climate communications toolkit | <p><i>Catch-up break + guest sessions</i></p> |
| 12 | <p>Careers week: Activities and events to launch you into your climate career</p> <ul style="list-style-type: none"> • CV workshop • Climate leadership and effectiveness in organizations workshop • Final climate action plan presentation and graduation celebration | |

Faculty Bios



Dr. Kamal Kapadia is co-founder and chief course creator for Terra.do. She has 22 years of work, research and teaching experience in the fields of climate change, clean energy and sustainable development. She began her career as Business Development Manager for SELCO in the late 1990s, building rural, off-grid markets for solar photovoltaic systems in India, Sri Lanka and Vietnam. Since then she has consulted for the World Bank on renewables-based electrification, worked on post-disaster rural livelihoods recovery with the Sarvodaya Shramadana Movement in Sri Lanka, evaluated energy efficiency proposals for the California Public Utilities Commission, and taught at the University of California, Berkeley. She was a research fellow at the Environmental Change Institute, University of Oxford from 2008 to 2012, and taught extensively on the Oxford Master's program in Environmental Change and Management. More recently, she worked on 100% clean energy advocacy at Blue Planet Foundation in Hawaii. Kamal holds an M.Sc. in Environmental Change and Management from the University of Oxford and a Ph.D. in Energy and Resources from the University of California, Berkeley.



Dr. Laney Siegner is Course Director for *Climate Change: Learning for Action* and course co-creator. Laney recently completed her Ph.D. at the U.C. Berkeley Energy and Resources Group. She researches sustainable, agroecological food systems and climate change education, and completed several summers of sustainable agriculture work while researching for her dissertation. She has published book chapters on the topic of teaching climate change in U.S. K-12 classrooms and on conducting participatory agroecology research. Prior to attending graduate school, she worked as a middle school teaching fellow for 2 years in Boston, MA, as part of an AmeriCorps National Teaching Fellowship. When she's not teaching or learning, she enjoys being outside for a variety of physical activities- farming, worm composting, trail running, bird watching, or swimming in the ocean. Originally from the East Coast, she now lives in Sonoma County, California. She helped build the off-grid tiny house that she now lives in with her partner, as part of the first-ever California Tiny House Competition.

Some previous guest experts (we add new ones all the time):

- **Dr. Harish Hande**, founder of SELCO-India, CEO of SELCO Foundation and Magsaysay Prize Winner.
- **Dr. Zeke Hausfather**, Director of Climate and Energy at The Breakthrough Institute and contributor to Carbon Brief, former research scientist with Berkeley Earth and senior climate analyst with Project Drawdown
- **Dipti Bhatnagar**, International Program Coordinator for Climate Justice and Energy, Friends of the Earth International (based in Mozambique)
- **Caroline Hickman**, Climate Psychology Alliance Executive Committee, Psychotherapist, therapeutic social worker and homeopath
- **Dr. Charles Fletcher**, Associate Dean for Academic Affairs and Professor, Department of Earth Sciences, at the School of Ocean and Earth Science and Technology (SOEST), University of Hawai'i at Mānoa, Vice-Chair of the Honolulu Climate Change Commission
- **Lindsay Hamilton**, Senior Director, National Media Strategy, Climate Nexus (climate communications)
- **Ravi Mantha**, Co-founder and Director, Bollant Industries Pvt Limited (eco friendly consumer products and packaging industry), Co-founder of Sage Sustainable Living and Baby Elephant Permaculture Farm, Hyderabad region of India
- **Dr. Navroz Dubash**, Professor, Centre for Policy Research, India
- **David Bill and Faith Van de Putte**, co-owners, Midnight's Farm, Lopez Island, WA; organic farmers, composters, and regenerative agriculture practitioners
- **Adrien Destrez and Thomas Rialan**, [Magelan.tech](https://magelan.tech) 'Climate Action Strategy' for businesses and start-ups
- **Dr. Tracey Osborne**, Associate Professor and UC Presidential Chair, UC Merced, Director of newly-created Center for Climate Justice
- **Dr. Laura Canevari**, Business Development Associate, Acclimatise, former climate risk analyst, DPhil and MSc in Environmental Change and Management from Oxford University
- **Anu Jogesh**, Policy and Governance Lead for Acclimatise South Asia based in New Delhi, formerly led a study on State ACTION Plans on Climate Change in India, MSc in Environmental Change and Management from Oxford University
- **Dr. Cecilia Han-Springer**, Senior Researcher at Boston University's Global Development Policy Center, Global China Initiative
- **Dr. Holmes Hummel**, founder Clean Energy Works, accelerating investments in the clean energy economy with inclusive financing
- **Dr. Amol Phadke**, Lead of the India Research Program in the Energy Analysis and Environmental Impacts Division at Lawrence Berkeley National Laboratory, and Senior Scientist at the Goldman School of Public Policy, University of California, Berkeley.