Announcing New MEES ISG Course!

CIPP650 - Climate Change, Health, and Society Course Syllabus

Course Information

Course Number: CIPP650
Course Title: Climate Change, Health, and Society
Semester & Year: Graduate and Professional Students
Start & End Dates: Mondays, January 29 to May 6, 2024, 1-3 pm
Class meetings: Hosick Hall, 100 Bressler Research Building, University of Maryland Baltimore and Zoom
Credit Hours: 2 credit hours

Instructor Information

Instructors: Shiladitya DasSarma (Course Director), Timothy Canty, Marianne Cloeren, Robert Feder, Robyn Gilden, Shailvi Gupta, Matthew Laurens, Lynn Michalopoulos, Snehal Patel, William Piermattei, Karin Gunther Russ (Course Co-director)

Course Overview

Description: Causes and impacts of climate change will be examined, emphasizing impacts on human health and society in Maryland and Baltimore, including health equity, environmental laws, and governmental policies. Case studies will be presented, and students will work in teams to suggest ways to address climate change-driven environmental challenges and support the development of innovative ideas to address these challenges.

Prerequisites: Graduate or professional program student status

Part 1. Climate Change Science

Class 1, January 29 (DasSarma): **Overview of basic science of climate change and health and societal impacts.**

Earth's climate and the greenhouse effect, from ice ages to recent climate change. Climate niche during the development of agriculture to the climate crisis: IPCC climate models and increasing risks to human society. Solutions to the climate crisis: achieving net-zero. Case study will examine the climate crisis in Maryland. In the discussion and assignment, students will draw the connections between climate change and impacts on human health and society.

Class 2, February 5 (Canty): **Weather, climate, greenhouse gases, air pollutants and impacts.**

Differentiate weather and climate. Define greenhouse gases vs other air pollutants. Review the fundamentals of the greenhouse effect and how greenhouse gases (GHGs) impact climate. GHG concentrations, sources and sinks, types of GHGs, etc. Global vs regional impacts. Maryland as a case study.

Part 2. Health Impacts of Climate Change

Class 3, February 12 (Gilden, Patel, Russ): **Introduction to climate change and health.**

In this broad overview of the human health implications of climate change, the class will examine extreme weather and climate-related events, air quality changes, food supply and quality, drinking water scarcity, and the transmission of disease through insects and pests. The discussion will be presented following several national and international governmental frameworks and will explore the disparate effects on disadvantaged, marginalized, and vulnerable populations both globally and locally.

Class 4, February 19 (Cloeren): **Health impacts of heat and air pollution.** This session will introduce students to the range of human health impacts of climate change using a major organ system perspective. Using a case study approach, students will connect exposures to excessive heat, humidity and ground-level air pollution to respiratory, cardiovascular, renal, reproductive, and neurologic system adverse outcomes, including heat exhaustion, heat stroke, kidney stones, chronic kidney disease, muscle injury, asthma, and heart attacks. In addition to pathophysiologic mechanisms, students will learn approaches to mitigate harm through practical adaptive preventive measures.

Class 5, February 26 (Patel, Laurens): **Vector- and water-borne infectious diseases.** Students will learn how climate change is leading to the regional, continental and worldwide spread of highly prevalent vector- and waterborne infectious diseases such as malaria, dengue, West Nile, zika, chikungunya, Lyme disease and vibriosis. In addition, students will learn how climate change may lead to the emergence of new pathogens that pose significant risks to humans and animals especially when effective treatment and vaccination options are not readily available. Students will be challenged to consider how the changing range of infectious disease hazards will impact the clinical approach to diagnosis, treatment, prevention and patient counseling.

Class 6, March 4 (Patel, Feder): **Mental health and violence.** The increasing frequency, severity and unpredictability of natural disasters, higher temperatures, drought, and wildfires are leading to a rise in the incidence and prevalence of mental health conditions such as anxiety, depression, PTSD, substance abuse, and violence. Individuals who live in disadvantaged, minority, and low resource communities are at especially high risk. Students will learn how climate change and social determinants of health disproportionately burden vulnerable populations in disadvantaged and low resource communities and the role for individual- and community-targeted psychological first aide and resiliency programs.

Part 3. Social Impacts of Climate Change

Class 7, March 11 (Gupta, Michalopoulos): **Extreme weather and ecological degradation.** Climate change is causing more challenges for people to survive globally, particularly in low resource settings. Climate change has caused increasing tensions leading to wars and conflict, and ultimately has created vulnerable populations and forced migration. We will look at case studies focusing on Haiti, Syria, Mozambique, Pakistan and Bangladesh to explore the various ways climate disasters can affect an entire country. Students will be exposed to the idea of disaster risk reduction and how low resources countries are improving their resilience to climate disaster in innovative, cost effective and efficient ways.

Project Proposal (Due March 15)

Spring Break (March 18)

Class 8, March 25 (Gupta, Michalopoulos): **Social justice international to local angle.** The economic impacts of climate change influence socioeconomic inequities at the international, national and local (Maryland) levels. Economic impacts also alter the ability of healthcare and health service professionals to address the health challenges identified. Looking at the social structure of the globe, the class will discuss how high-income countries are contributing to climate change disproportionately while the low-income countries seem to be on the frontlines of climate change vulnerability. The class will also discuss how the debt structure for low-income countries does not allow adequate funding for climate disaster prevention.

Part 4. Law and Policy of Climate Change

Class 9, April 1 (Piermattei): **Federal environmental law.** Moving from the individual, community, and societal impacts of climate change on health, the course will now explore legal approaches to mitigating GHG emissions and discuss the effectiveness (or ineffectiveness) of these policies. This class will focus on two major U.S. federal laws: The National Environmental Policy Act ("NEPA") and the Clean Air Act, and their influence on the regulation of greenhouse gases.

Class 10, April 8 (Piermattei, Russ): **Non-regulatory legal approaches to GHG emissions.** Mitigating and adapting to climate change is a challenge that needs to be addressed at the international, national, and state level. This class will explore international approaches, carbon markets, infrastructure development, taxes, state laws, policy and advocacy opportunities, including the Maryland Climate Solutions Now law, enacted in 2022.

Part 5. Deliverables: Planning for Climate Change and Moving to Sustainable Practice

Looking at the policy choices Maryland, the country and the world face, the class will explore what policies can move us toward a more sustainable world and how we can better mitigate and adapt as a society. Student groups will focus on a particular aspect of challenges from climate change and work together as interdisciplinary teams to address those sustainable practices which may lead to solutions. As part of this course, the Transform MidAtlantic program of the Eastern Region Campus Consortium will sponsor a Workshop on University-Community Communication and Cooperation on Climate Change, Health, and Society in Maryland.

Class 11, April 15 (Canty & Piermattei): **Stakeholders panel**

Seema Kakade, Senior Counsel, White House Council on Environmental Quality
Susan Dorsey, Deputy Director, Maryland Department of the Environment
Clifford S. Mitchell, M.D., Director, Environmental Health Bureau, Maryland Department of Health
Pete Epanchin, Bureau for Resilience Environment and Food Security, United States Agency for International Development

Class 12, April 22 (DasSarma & Russ): **Community panel**

Amanda Phillips de Lucas, Executive Director, Baltimore Neighborhood Indicators Alliance
Elliot Weidow, Managing Director, Baltimore Tree Trust
Quinton Zondervan, Councilor, City of Cambridge, Massachusetts
Rebecca Rehr, Director of Climate Policy & Justice, Maryland League of Conservation Voters

Part 6. Student presentations

Class 13 & 14: Student teams will present proposed solutions to human health and societal problems arising from climate change with the goal of promoting climate resiliency.