

Syllabus ↴

Course Information

GH/ENV H 220, Managing the Health Risks of Climate Change

Professor: Kristie L. Ebi, PhD, MPH



Email: krisebi@uw.edu (<mailto:krisebi@uw.edu>)

(<mailto:krisebi@uw.edu>) Office: Hans Rosling Building

Office Hours: by appointment

GH/ENV H 220 (3 credits)

Lectures Mondays / Wednesdays 10:00 – 11:20am

Health Sciences Education Building (HSEB) 345

Instructor:

Kristie L. Ebi, PhD, MPH

Professor, Departments of Global Health, and of Environmental and Occupational Health Sciences

krisebi@uw.edu (<mailto:krisebi@uw.edu>)

Teaching assistants:

Sulemana Abdul-Matinue; abduls1@uw.edu (<mailto:abdulmatinu45@gmail.com>)

Isabel Nerenberg; isaben@uw.edu (<mailto:isaben@uw.edu>)

Office hours will be held by appointment.

Prerequisites: None. This is a broad course open to students without specific training in the areas of climate change, environmental sciences, and/or public health.

Course Description

The world has entered the Anthropocene epoch. Humans are the primary drivers of global environmental changes and are changing the planet on the scale of geological forces. Global environmental changes include climate change, ozone depletion, biodiversity loss, nitrogen fertilization, and ocean acidification. Students will be introduced to the range of global environmental changes and their consequences for human health and well-being, with a focus on climate change and its consequences. Vulnerable populations and regions will be differentially affected, with the potential to increase poverty and inequities.

To address these challenges, the United Nations Sustainable Development Goals (SDGs) were agreed in 2015 to achieve a better and more sustainable future for all. They include 17 global goals with targets for 2030. The SDGs aim to end all forms of poverty. The SDGs are unique in that they call for action by all countries, poor, rich, and middle-income to promote prosperity while protecting the planet. They recognize that ending poverty must go hand-in-hand with strategies that build economic growth and address a range of social needs including education, health, social protection, and job opportunities, while tackling climate change and environmental protection.

Climate change is causing injuries, illnesses, and deaths, with any further increase in the global temperature projected to further increase morbidity and mortality from most climate-sensitive health outcomes without additional actions to rapidly increase adaptation and reduce greenhouse gas emissions.

Of particular concern are heat-related morbidity and mortality; and ozone-related mortality if emissions needed for ozone formation remain high. Urban heat islands often amplify the impacts of heatwaves in cities. Risks for some vector-borne diseases, such as malaria and dengue fever, are projected to increase with warming from 1.5°C to 2°C, including potential shifts in their geographic range and changes in their seasonal distribution. Undernutrition is projected to increase with additional warming. Separately, increasing concentrations of carbon dioxide are expected to reduce the nutritional quality of significant cereal crops. Other potentially large risks are insufficiently quantified, including the impacts of climate variability and change on a range of climate-sensitive health outcomes, such as diarrheal diseases, occupational heat stress, mental health, and migration and displacement.

Students will gain foundational knowledge in the health effects of global environmental changes, particularly climate change, benefits of policies and technologies to reduce greenhouse gas emissions and adaptation needs and strategies.

Overall Learning Objectives

Students will be able to:

- Identify the major global environmental changes and the upstream drivers behind these changes

- Identify the health risks of climate variability and change, including the sources of vulnerability and exposure to those risks
- Identify highly vulnerable populations domestically and globally
- Identify key interventions to promote climate-resilient health systems
- Enumerate key issues in implementing, monitoring, evaluating, learning from, and continuously updating, adaptation policies and programs
- Identify the health co-benefits of mitigation policies to reduce greenhouse gas emissions

Expectations of Students

Students are expected to prepare for, attend, and participate in class discussions, demonstrate knowledge of assigned readings, and demonstrate teamwork/professionalism. Students are also expected to take the midterm exam, the final exam, and write one paper on a relevant topic chosen between the student and the instructors. (see Grades)

Grades

- **30%**midterm exam
- **30%**final exam
- **30%**paper
- **10%** reading questions

We will use the UW's grading guidelines, available at

<http://depts.washington.edu/grading/practices/guidelines.html> ↗
(<http://depts.washington.edu/grading/practices/guidelines.html>).

Course Requirements

Assigned textbook and readings. Readings will be assigned every week to be completed before class. The readings will be from the assigned textbook or other sources. Alternative media sources such as videos may be included.

Textbook:

Lemery J, Knowlton K, Sorensen C. Global Climate Change and Human Health, 2nd Edition: From Science to Practice. Wiley, 2021

Reading questions: Reading assignments will be given most weeks. These readings will supplement the lectures, as well as be a source for in-class discussion. Most of these readings will come from the textbook, while others will come from other sources and be provided on the canvas page. To facilitate discussion and contribute to your grade, you will be asked to submit two questions or comments on each reading by Midnight the day before class. Questions or comments will be

submitted through the Canvas discussion page, which will close by Midnight the day before class. **No late submissions will be accepted.** You will be allowed to miss two reading questions submissions and still receive full credit.

Exams: The **midterm exam** will take place **6 February**, covering course materials until that point. It will be an in-class exam consisting of multiple choice, short answer, and essay questions.

The **final exam** will take place in class **13 March at 8:30 am** during finals week and will be cumulative with a focus on the new materials after the midterm. The exam will consist of multiple choice, short answer, and essay questions.

Paper: Students will write a paper on some aspect of the health risks of global environmental change, reviewing a particular health risk, or describing adaptation or mitigation options to reduce that risk, in the context of a specific country or city. The paper will be at least 10 double-spaced pages and contain a minimum of 10 references that are peer-reviewed, scholarly articles found in scientific journals. A grading rubric will be provided for the paper. A one-paragraph summary and outline of the topic for the individual paper will be due one week after the mid-term exam on **Wednesday, February 8**. The paper will be due at the start of class on **Monday, March 6**. Please include your name in the file name.

Extra Credit: Students may receive extra credit for attending any event throughout the quarter relevant to the course materials and submitting a short essay about the event.

Email Policy

Emails received after 5 pm will be answered within 24 hours whenever possible, and not before 9 am the following morning.

UW Writing and Research Center:

The Odegaard Writing & Research Center (OWRC) offers free, one-to-one, 45-minute tutoring sessions for undergraduate, graduate, and professional writers in all fields at the UW. They will work with writers on any writing or research project, as well as personal projects such as applications or personal statements. Their tutors and librarians collaborate with writers at any stage of the writing and research process, from brainstorming and identifying sources to drafting and making final revisions. For more information or to schedule an appointment, please see their website (<http://deps.washington.edu/owrc> (Links to an external site.))  (<https://deps.washington.edu/owrc>) or visit in person on the first floor of Odegaard Undergraduate Library.

Microsoft Word: It is beneficial in this course for students to have access to Microsoft Word. The Microsoft Office suite is available for free to all UW students and can be downloaded from this [online site](https://itconnect.uw.edu/wares/uware/microsoft/microsoft-software-for-students/) (<https://itconnect.uw.edu/wares/uware/microsoft/microsoft-software-for-students/>). If you have additional questions, please contact the TA.

Winter quarter respiratory illnesses – protocols and safety

This class will be conducted in person. Therefore, you should plan to attend class in person unless you meet the criteria for an accommodation from Disability Resources for Students (DRS) or a special arrangement approved by the SPH Office of the Dean that allows you to take the course remotely.

Winter quarter is a time of increased risk of acquiring respiratory illnesses including COVID, RSV, cold, and flu. If you feel ill or exhibit respiratory or other symptoms, you should not come to class. Seek medical attention if necessary and notify your instructor(s) as soon as possible by email.

Please check your email daily BEFORE coming to class. If we need to conduct class remotely because the instructor or a guest speaker is unable to attend in person, we will send all registered students an email with a Zoom link for remote instruction or a plan for making up the class.

Additional recommendations include:

1. **Get boosted with the updated COVID-19 vaccines** (http://we.discover.uw.edu/NTI3LUFIUi0yNjUAAAGIk0z8-ku4dK1F60Qwx5sVB9F2zPf2PtjPbEQN0oAXWTw4xyUlayD-3Dn6tkPV-b9qYPVKN_s=). These vaccines are available at clinics and pharmacies, as well as through UW Medicine (http://we.discover.uw.edu/NTI3LUFIUi0yNjUAAAGIk0z8-rZLyUV3OKyCGDzGK2pj5QyxQq14YnSJSLWoEiG_BskVghbuDCoOCaDQZDj1HhDtQ28=) and local health agencies.
2. **Get your annual flu shot** (<http://we.discover.uw.edu/NTI3LUFIUi0yNjUAAAGIk0z8-p8AShT60UfuTPp6L1-t9MeMiS8rrCJoY1HdFNMDUpsMKUh95VFz6INtjkf3R2dEH3M=>).
3. **Wear a high-quality mask in indoor public spaces and while traveling. Masks are strongly recommended the first two weeks of winter quarter.** High-quality masks help protect against a range of respiratory viruses, and are available for free in locations on each UW campus (http://we.discover.uw.edu/NTI3LUFIUi0yNjUAAAGIk0z8-vvPawo32qTEDivNHXudxfJ86KNJ7wSFb24jzmDKknFXp_lcn7BOiAk0vTZcfssVCQY=).
4. **Take a coronavirus test if you have symptoms or have been exposed.** Rapid antigen tests are widely available for free in at on campus locations linked here  (https://www.washington.edu/coronavirus/testing/?mkt_tok=NTI3LUFIUi0yNjUAAAGIk0z8-Ih4rJkVTP0uu0x9Qjo03it8Dqjcg-b8MMF3oVqsuHG2uoxdCV_LSqQ4pXPG_I3dC3PI76N-P0Pk7a0LzK9p8iT0fsJ4PvzXS155og). The Husky Coronavirus Testing (http://we.discover.uw.edu/NTI3LUFIUi0yNjUAAAGIk0z8-vzM5PdwrHbUB_QiTo_vUCpaMHj5R4-EPxZHeHpW885q6tKNP_evGy-Nqcx025qjyxc=) voluntary research study is also available for UW students.
5. **Activate WA Notify on your phone** (http://we.discover.uw.edu/NTI3LUFIUi0yNjUAAAGIk0z8-pPDyjN6GI5YTqHyjmQA3y8d4y3WLT-C66_TuWe9QeeuVV_YE2asMhxcq xv8m4XSZM=) to receive exposure notifications and so that you can anonymously let others know of their exposure if you test positive.

SPH Land Acknowledgement

The University of Washington acknowledges the Coast Salish people of this land, the land which touches the shared waters of all tribes and bands within the Duwamish, Suquamish, Tulalip, and Muckleshoot nations.

Classroom Climate

The UW School of Public Health seeks to ensure all students are fully included in each course. We strive to create an environment that reflects community and mutual caring. We encourage students with concerns about the classroom climate to talk to your instructor, your advisor, a member of the departmental or SPH Diversity Committee and/or the program director. [\(mailto:vg@uw.edu\)](mailto:vg@uw.edu) is a resource for students with classroom climate concerns.

Equity, Diversity, and Inclusion

Diverse backgrounds, embodiments and experiences are essential to the critical thinking endeavor at the heart of university education. In SPH, students are expected:

1. To respect individual differences, which may include, but are not limited to, age, cultural background, disability, ethnicity, family status, gender, immigration status, national origin, race, religion, sex, sexual orientation, socioeconomic status, and veteran status
2. To engage respectfully in the discussion of diverse worldviews and ideologies embedded in course readings, presentations, and artifacts, including those course materials that are at odds with personal beliefs and values
3. To encourage students with concerns about classroom climate to talk to their instructor, advisor, a member of the departmental or SPH EDI Committee, the Assistant Dean for EDI, or the program's director

Bias Concerns

The Office of the Dean has a student concern policy, a faculty concern policy and standard HR procedures for staff concerns. Our 2018 climate survey states that most people in SPH do not report bias incidents because they do not know where to go. Students are encouraged to report any incidents of bias to someone they feel comfortable with, including instructors, advisers, or department staff. They can email dcinfo@uw.edu for immediate follow up. Bias concerns can be anonymously and confidentially reported at this link <https://sph.washington.edu/about/diversity/bias-concerns> (Links to an external site.). Data are collected by the Assistant Dean for EDI and the Director of Program Operations for Student and Academic Services and tracked for resolution and areas are identified for further training.

Personal Pronouns

According to the UW First Year Programs, being an ally is not just about intention, it's also about behavior. We share our pronouns because we strive to cultivate an inclusive environment where

people of all genders feel safe and respected. We cannot assume we know someone's gender just by looking at them. We invite everyone to share their pronouns. Faculty training and consultation on pronoun use is available for SPH faculty from the Assistant Dean for EDI. Including pronouns on syllabi is optional as we work to develop and provide further training to all teaching faculty.

Religious Accommodation Statement

Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The UW's policy, including more information about how to request an accommodation, is available at [Religious Accommodations Policy](https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/)  (<https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/>). Accommodations must be requested within the first two weeks of this course using the [Religious Accommodations Request form](https://registrar.washington.edu/students/religious-accommodations-request/)  (<https://registrar.washington.edu/students/religious-accommodations-request/>).

UW Disability Statement

Access and Accommodations: Your experience in this class is important to us, and it is the policy and practice of the University of Washington to create inclusive and accessible learning environments consistent with federal and state law. If you experience barriers based on a disability or temporary health condition, please seek a meeting with DRS to discuss and address them. If you have already established accommodations with DRS, please communicate your approved accommodations to your instructor at your earliest convenience so we can discuss your needs in this course.

Disability Resources for Students (DRS) offers resources and coordinates reasonable accommodations for students with disabilities and/or temporary health conditions. Reasonable accommodations are established through an interactive process between you, your instructor(s) and DRS. If you have not yet established services through DRS, but have a temporary health condition or permanent disability that requires accommodations (this can include but not limited to; mental health, attention-related, learning, vision, hearing, physical or health impacts), you are welcome to contact DRS at 206-543-8924 or uwdrs@uw.edu  or [disability.uw.edu](http://depts.washington.edu/uwdrs/)  (<http://depts.washington.edu/uwdrs/>)

Academic Integrity Statement

Students at the University of Washington (UW) are expected to maintain the highest standards of academic conduct, professional honesty, and personal integrity. The UW School of Public Health (SPH) is committed to upholding standards of academic integrity consistent with the academic and professional communities of which it is a part. Plagiarism, cheating, and other misconduct are serious violations of the University of Washington Student Conduct Code (WAC 478-120). We expect you to know and follow the university's policies on cheating and plagiarism, and the [SPH Academic Integrity Policy](http://sph.washington.edu/students/academicintegrity/)  (<http://sph.washington.edu/students/academicintegrity/>). Any suspected cases of academic misconduct will be handled according to University of Washington regulations. For more information, see the University of Washington Community Standards and Student Conduct website.

Safety

Call SafeCampus at 206-685-7233 anytime – no matter where you work or study – to anonymously discuss safety and well-being concerns for yourself or others. SafeCampus's team of caring professionals will provide individualized support, while discussing short- and long-term solutions and connecting you with additional resources when requested.

Excused Absence from Class

Students are expected to attend class and to participate in all graded activities, including midterms and final examinations. A student who is anticipating being absent from class due to a Religious Accommodation activity needs to complete the Religious Accommodations request process by the second Friday of the quarter. Students who anticipate missing class due to attendance at academic conferences or field trips, or participation in university sponsored activities should provide a written notice to the instructor ahead of the absence. The instructor will determine if the graded activity or exam can be rescheduled or if there is equivalent work that can be done as an equivalent, as determined by the instructor.

Medical Excuse Notes

Students are expected to attend class and to participate in all graded activities, including midterms and final examinations. To protect student privacy and the integrity of the academic experience, students will not be required to provide a medical excuse note to justify an absence from class due to illness. A student absent from any graded class activity or examination due to illness must request, in writing, to take a rescheduled examination or perform work judged by the instructor to be the equivalent. Students are responsible for taking the examinations for which they are scheduled on a given day and may not request an adjustment for this reason alone.

Course session schedule:

Class	Instructor	Topic	Assigned Readings
WEEK 1			
Class 1 WED	Ebi	Welcome to the Anthropocene	No reading assignments
1/4			
WEEK 2	Ebi	International organizations and processes	https://sdgs.un.org/goals
Class 2			

MON

1/9

WEEK 2

Class 3	Bumbaco	Weather, climate, climate variability, and Chapter 1: Primer on Climate Science
WED		climate change
1/11		

WEEK 3

MON	<i>Martin Luther King Day</i>	No class	No reading assignments
1/16			

WEEK 3

Class 4	Ebi	Methods for assessing current and projecting health risks of climate change	Chapter 13: Climate Modeling for Health Impacts
WED			
1/18			Chapter 15: Climate Change Health Impact Projections: Looking into the Future

WEEK 4

Class 5	Boyer	Framework for understanding and managing risks; vulnerability and adaptation assessments	Chapter 14: Climate and Health Vulnerability Assessments: New Approaches and Tools for Adaptation
MON			

WEEK 4

Class 6	Busch-Isaksen	Thermal extremes and their health impacts	Chapter 3: Health Impacts of Extreme Heat
WED			
1/25			

WEEK 5	Ebi	Air quality	Chapter 5: Degraded Air Quality
---------------	-----	-------------	---------------------------------

Class 7

MON

1/30

WEEK 5

Class 8 Ebi Food security Chapter 9: Food Systems Transformation:
WED Toward Sustainable and Healthy Diets for All

2/1

WEEK 6

2/6

WEEK 6

Class 10 Ebi Communicating risks
WED

2/8

Chapter 16: Protecting Environmental Justice Communities from the Detrimental Impacts of Climate Change

WEEK 7

Class 11		Disaster policy and risk management	Chapter 22: Climate Change and Disaster Risk Reduction
MON	Errett		

2/13

Paper topic paragraph due

WEEK 7

WEEK 7	Hess	Biodiversity loss	Chapter 28: Climate Change and Loss of Biodiversity
Ch 28			

Class 12

2/15

Chapter 29: Ecosystem Services

WEEK 8

MON	President's Day	No class	No reading assignments
2/20			
			https://www.ucsusa.org/resources/ozone-hole-and-global-warming#.VsV2NflrlU0 ↗ (https://www.ucsusa.org/resources/ozone-hole-and-global-warming#.VsV2NflrlU0)

WEEK 8

Class 13	Ebi	A success story: stratospheric ozone depletion and public health	https://www.youtube.com/watch? v=lBu3vltczRw
WED			
2/22			

WEEK 9

Infectious diseases

Chapter 4: Climate Change Impacts on the Hydrologic Cycle and Waterborne Diseases

Chapter 8: Climate and its Impacts on Vector-borne Diseases

Chapter 18: International Perspective on Climate Change Adaptation

Climate change policy and health co-benefits

Chapter 19: Health Co-Benefits of Climate Mitigation Strategies

3/1

Chapter 31: The Global Energy Transition and Public Health in a Changing Climate

Changes in our land and oceans

SPM IPCC Special Report on Climate Change and Land

MON

3/6

SPM IPCC Special Report on the Ocean and Cryosphere in a Changing Climate

WEEK 10

Student panel Ph.D. and MPH
Class 17 students working on No reading assignments
WED climate and health at
Course review UW
3/8