

## Graduate Certificate Proposal in Climate Change and Health

### Overview

The Graduate Certificate in Climate Change and Health (GCeCCH) certificate program is open to currently-matriculated students in any UW graduate program. The 15-credit (min.) curriculum includes one required three-credit graduate course in climate change and health and one required three-credit graduate course in climate science; one required two-credit communication course; at least two electives outside the student's primary discipline; and a three-credit Capstone Experience tailored to the student's interests. The required core courses provide an overview of climate change from the perspectives of Earth science and public health, health issues associated with climate change, relevant methods in health and other sciences, and an introduction to important perspectives from other disciplines. The electives include courses from a wide range of other disciplines at UW that provide relevant complementary perspectives, including those from Earth and atmospheric sciences, geography, policy, social work, life and environmental sciences, the built environment, and other areas. The Capstone Experience will provide a mentored opportunity to explore a climate and health topic more deeply and experience an interdisciplinary approach to the characterization or management of a climate and health concern.

### Relationship to Institutional Role, Mission, and Academic Unit Priorities

The Center for Health and the Global Environment (CHanGE) was founded as a strategic initiative through the School of Public Health to engage departments and academic units from all over campus around Global Change research, training, and practice. Our mission includes teaching the next generation of leaders about research and practice in the discipline of Climate and Health. Our strategic objectives include developing courses and other academic offerings to engage students at all levels and across a wide range of disciplines. We currently have both an undergraduate course and a graduate course and provide content to a number of other professors' courses around campus. Our activities intersect with a number of priority areas in the Population Health Initiative. The graduate certificate would bring together students from across campus (public health, medicine, physical sciences, law, policy, environment, urban planning, etc.) and promote innovative

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and original research and practice on this important topic that is a high priority for the university overall.

## Curriculum

Core Course I	3 credits	GH/ENV H 518
Core Course II	3 credits	ATMS S 587
Core Course III - communication	Var. credits	Either: ENV H 521 (2 credit); or OCN/ATMS/ESS 593 (1 credit); OR PUBPOL 582 (3 credits); OR other communication-related course with approval from CHanGE
Capstone Project	min. 3 credits	ENV H/GH/ATMS/OCN 600
Electives	remainder of credits	See attached list
Total	15 credits	

Note: The Graduate School requires all graduate certificates to be a minimum of fifteen student credit hours, nine of which must be earned in courses numbered 500 and above. Nine student credit hours must be earned in graded courses. The overlap of coursework applied toward both a certificate program and a graduate degree program must not exceed 6 credits and is limited to elective coursework in each program.

### Core (required) Courses

Three core classes for a total of seven to nine credits are required (depending on the communication course chosen). The first is GH/ENV H 518, "Understanding and Managing the Health Risks of Climate Change" (3 credits). The second is ATM S 587, "Fundamentals of Climate Change" (3 credits). The third is a communication-focused course chosen from Either ENV H 521 "Effective Communication Strategies for Environmental Public Health Professionals" (2 credit); or OCN/ATMS/ESS 593 "Communicating Climate Science Seminar" (1 credit); or PUBPOL 582 "Communicating Climate Change" (3 credits) or other communication-related courses with approval.

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Capstone ENV H 600 (Min 3 credits), GH 600 (Min 3 credits), or ATMS/OCN/ESS 596 (Min 3 credits)

The capstone is a hands-on activity focused on climate and health. **All capstone projects must be approved by CHanGE prior to starting work.**

While capstone projects will vary depending on the stakeholders and organizations involved, all projects should include:

- substantial interaction with stakeholders to clarify their needs regarding climate and health research and practice;
- development of an applied project that responds to stakeholder needs; projects can include a focused research effort, literature review, development of a curriculum, development of a communication tool, or other activity that will be responsive to the stakeholder's needs;
- preparation of a detailed final report, including any materials, presentations, and other products related to the project; and
- close mentorship by certificate faculty and involved stakeholders throughout the project.

While projects will vary, common competencies that students will develop through the capstone include:

- organizational needs assessment
- translation of needs into priorities and action items using logic frames and other tools
- implementation science skills such as development of outcomes, indicators, and metrics
- skills in searching, reviewing, and synthesizing scientific and practice-based literature
- anticipation and negotiation of organizational barriers and constraints in climate change adaptation
- communication of scientific information to lay audiences
- preparation of scientific documents for community and practice-based stakeholders and for scientific audiences
- development of figures or graphics to facilitate communication of scientific findings related to climate and health

For the capstone, students will articulate interests and goals for their capstone projects and will be assisted by CHanGE faculty and affiliates in identifying partner organizations. Together the student, faculty, and stakeholder mentors will develop

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goals and objectives for the capstone experience that will be entered into a tracking form for the capstone project. If students intend to build off their current thesis or dissertation work, the capstone product shall be a substantial addition to the student's research AIMS and be clearly defined in the above referenced goals and objectives. CHanGE faculty will be the primary mentors during the capstone experience, and will coordinate with CHanGE's Director of Education and Training and partner organization contacts. Students will be evaluated based on their steady progress toward stated objectives and on the final product. The project may span more than one quarter. Students will receive narrative evaluations from their CHanGE faculty and organizational sponsors. The student's file will be updated with the tracking form, products from the capstone project, and narrative evaluations upon capstone project completion.

### Electives

Students will choose an elective outside of the student's primary discipline, to bring their total certificate credits to a minimum of 15. Please see attached for a list of available elective courses and their credits.

### **Student Learning Outcomes**

GCeCCH holders will be able to:

1. Describe the general science behind climate change, list the principal sources of greenhouse gas emissions, and rank different sectors regarding the magnitude of their contributions to climate change
  2. Articulate the linkages between climate change and health and elaborate on the causal pathways linking specific climate-related exposures and associated health outcomes
  3. Explain the use of emissions scenarios in projecting climate change environmental impacts using global circulation models and discuss how scenarios relate to projections of health impacts
  4. Recount the likely trajectory of climate change over the course of the 21<sup>st</sup> century and assess the likely health impacts associated with differing degrees of warming
  5. Describe the principal methods used to characterize associations between climate-related exposures and associated health effects, the methods used to conduct surveillance of current climate change health impacts, and the methods used to project future climate change health impacts
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6. Criticize the methods outlined above with particular emphasis on threats to validity and with regard to uncertainty and its management
  7. Describe the distribution of climate change health impacts and contrast this distribution with that of historical greenhouse gas emissions
  8. Characterize the role of integrated assessment models in projecting climate change-related damages and social costs
  9. Define climate change adaptation, describe how adaptation is pursued in the public health sector, and report on the state of climate change adaptation in the US and other areas including the use of indicators and public health surveillance
  10. Define climate change mitigation and characterize the importance of the health co-benefits of mitigation activities, how these co-benefits are quantified, and the state of co-benefits research
  11. Describe the difference between hazards and risks and the factors affecting vulnerability
  12. List the hallmarks of a complex system, describe adaptive management, and relate how adaptive management can be used to iteratively adapt to pressing climate and health concerns
  13. Summarize the role of risk management in climate change mitigation and adaptation and apply risk management principles to the public health response to climate change
  14. Outline the major international scientific and policy bodies focused on climate change, relate important milestones in climate change policy domestically and internationally, and report on the current status of domestic efforts to enact commitments the US has made internationally
  15. Develop and practice skills important to engaging diverse audiences around climate and health messaging
  16. Create key messages specific to capstone/thesis research findings and communicate to a broader, non-scientific audience

### **Governance and Faculty Involvement**

The certificate will be administered through the School of Public Health and the Graduate School, Department of Environmental and Occupational Health Sciences and co-sponsored by the Departments of Environmental & Occupational Sciences EOHS and Global Health.

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Dr. Tania Busch Isaksen directs the certificate program. Faculty for advising students in their Capstone Experiences will include Drs. Ebi and Hess as well as members of the Center on Health and the Global Environment (CHanGE); please see [CHanGE website](#) for a list of current members.

The faculty advisor is strongly encouraged to become a member of CHanGE for at least the duration of the student's certification.

### **Admission Process, Student Tracking, and Granting Certificates**

Students intending to pursue the GCeCCH should complete an application (found on the CHanGE website, [globalchange@uw.edu](mailto:globalchange@uw.edu)) and forward to the Center for Health and the Global Environment (CHanGE) coordinator at [chge@uw.edu](mailto:chge@uw.edu). Students will be accepted into the GCeCCH based on strong prior scholastic performance in relevant undergraduate and graduate courses and should submit a letter of support from someone who has worked closely with the student in an academic or other capacity with their application (faculty support form available on website). CHanGE's program manager will manage admissions, track student progress and with help of DEOHS academic staff, submit the request to Graduate Management Services in the Graduate School for granting of the certificate.

### **Admission Standards**

Prerequisites include admission to the graduate program of (a) Environmental Health (ENV H), (b) Global Health (GH), or (c) another University of Washington graduate program with at least three quarters (2 semesters) of undergraduate or graduate coursework in geophysical science, chemistry, biology, physics, and/or health sciences with an average grade of B (3.0). Students must demonstrate an interest in the public health effects of climate change.

### **Grading/Assessment and Minimum Standards**

Successful completion of the Certificate Program requires a minimum cumulative GPA of 3.0 and a grade of 2.7 or higher for each course counted toward the certificate. Student capstone activities will be evaluated as outlined above.

An annual survey will be sent to enrolled students and selected faculty to evaluate the certificate program content, leadership, and capstone experience. Elective courses will be evaluated on an annual basis by directors to assure program quality.

### **Transcript Title**

Certificate in Climate and Health

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## **Program Elimination**

The School of Public Health and the Department of Environmental and Occupational Health Sciences agree that a process for considering the elimination of the Climate Change and Health Graduate Certificate program will be triggered if there are no enrolled candidates over a period of three consecutive academic years. Elimination procedures are governed by sections 26-41 of the Faculty Code. Because the process for proposing the elimination of a program requires thorough input and concurrence from all stakeholders, the consideration of elimination does not in itself determine that elimination will occur.