

PLAN 656: Climate change impacts and adaptation

Instructor Name	Professor Miyuki Hino	Meeting day	Mondays and Wednesdays
Email	mhino@unc.edu	Meeting time	11:15am-12:30pm
		Location	Murray G205

Office Hours by appointment at <https://calendly.com/miyukih>

COURSE SYLLABUS**Course Description**

This course is an introduction to climate change impacts and adaptation for undergraduate juniors and seniors and graduate students. The focus of this course is understanding how social and environmental systems interact to create risk and damage. It is designed to prepare students from all backgrounds to design and implement adaptation strategies for organizations of all types, from businesses to government agencies. Students will learn to integrate information about climate hazards, natural systems, built infrastructure, and socioeconomic systems to assess and manage climate risk.

Learning Objectives

By the end of the course, students should be able to:

- [1] Use online tools to gather climate data and climate change projections
- [2] Explain how climate change and natural hazards affect built and natural environments, health, and economic outcomes
- [3] Evaluate the suitability of different engineering, financial, policy, and ecosystem-based risk management strategies for different hazards and different communities
- [4] Describe how wealth, race, age, and other characteristics make certain groups disproportionately vulnerable to certain hazards
- [5] Conduct a basic climate change and natural hazard risk assessment

Pre-requisites

To succeed in this course, students should:

- ▶ Have prior training or experience in using spreadsheets, MS Excel and MS Word.
- ▶ Helpful, but not required: familiarity with software to manage spatial data (e.g. QGIS, Arc, R)

Course Materials

Required text: All course materials will be posted on Sakai.

Class Format

At the time of writing, this course will be taught fully in-person. However, as has been the case throughout the pandemic, we should all be prepared for potential changes, including a switch to a virtual course format.

All enrolled students are required to wear a mask covering your mouth and nose at all times in our classroom. This requirement is to protect our educational community — your classmates and me — as we learn together. If you choose not to wear a mask, or wear it improperly, I will ask you to leave immediately, and I will submit a report to the [Office of Student Conduct](#). At that point you will be disenrolled from this course for the protection of our educational community. Students who have an authorized accommodation from Accessibility Resources and Service have an exception. For additional information, see [Carolina Together](#).

In this class, we will have:

- ▶ **Readings, podcasts, and other material to be reviewed on your own time before class.** All of the material will be posted on Sakai.

- ▶ **Lecture.** To organize material from the readings and related sources in a systematic fashion and to supplement it with additional background and examples.
- ▶ **Discussion.** Come to class ready to discuss the readings. You are encouraged to contribute examples from your own work experience, questions, clarifications, comments, and discussion points throughout the course. In-class activities will sometimes require use of online tools such as Google Docs and Poll Everywhere, so please come to class prepared with a laptop.
- ▶ **Individual and group assignments.** Additional details will be provided later on.

Assignments and Grading

Your course grade will consist of:

- ▶ **Group report and presentation**
 - Working in small groups, students will analyze the climatic and societal drivers of a specific natural hazard risk. The deliverables include an in-class presentation and a brief report that serves as a primer on the hazard for the class. Additional details will be provided during the semester.
 - The in-class presentations will occur during two class sessions in early October. The reports are due on the date of the presentation.
- ▶ **Case Study**
 - Students will individually analyze a case study of a community, organization, or company that has taken steps to respond to natural hazard risk (or are considering different response measures). The brief report should focus on the decision-making process. Additional details will be provided.
 - The case studies are due on November 10.
- ▶ **Risk Assessment and Response Strategy**
 - Students will individually conduct a risk assessment for a specific hazard, location, and sector, then make recommendations for response strategies. The report will consist of a hazard and exposure analysis as well as a vulnerability assessment. Additional details will be provided.
 - The written report will be due on the date of the final exam.
- ▶ **Participation**
 - For each class session, there will be a combination of readings, lectures, and other material to review. This material must be read/listened to/watched before the start of class.
 - Students must come to class prepared to discuss the lecture and reading material. Class will be highly interactive, and both the quantity and quality of your contributions will count toward your participation grade (which is worth 15% of your total grade).
 - Excessive absences will affect your participation grade. However, I encourage everyone to be proactive and cautious regarding any symptoms or potential Covid exposures. Any absences for those reasons will be excused. Your engagement while you are in class is more influential than your attendance record.

Late assignments will be penalized 5% per day. If you contact me more than 24 hours before the deadline with a request for an extension, I will consider it. Within 24 hours, I will not.

Each graded component will contribute to the final grade as follows:

	Due Date	% Grade
Case study	11/10	25%
Group presentation and report	Early October	25%
Participation		15%
Risk assessment and response strategy	12/6	35%

Final grades will be assigned as follows:

Undergraduate Grade				Graduate Grade
A	94%	to	100%	High Pass
A-	90%	to	93%	
B+	87%	to	89%	Pass
B	84%	to	86%	

B-	80%	to	83%	
C+	77%	to	79%	
C	74%	to	76%	
C-	70%	to	73%	
D+	67%	to	69%	Low Pass
D	60%	to	66%	
F	0%	to	59%	Fail

Approved Absences

Any request for an approved class absence must be approved by the University Approved Absence Office attendance.unc.edu. No right or privilege exists that permits a student to be absent from any class meetings, except for these University Approved Absences:

- ▶ Authorized University activities
- ▶ Disability/religious observance/pregnancy, as required by law and approved by Accessibility Resources and Service and/or the Equal Opportunity and Compliance Office (EOC)
- ▶ Significant health condition and/or personal/family emergency as approved by the Office of the Dean of Students, Gender Violence Service Coordinators, and/or the Equal Opportunity and Compliance Office (EOC).

Absences due to your own health, potential exposures to Covid, and caretaking related to Covid are approved absences. Please do not take any risks with your own health or that of your classmates. As noted in the participation policy above, those absences will not negatively affect your grade as long as we know about them.

Please communicate with the instructors *early* about any absences from class. We understand that emergencies happen and that life is especially unpredictable during a pandemic, so please get in touch if you expect to be missing a class.

Honor Code

The Honor Code of the University of North Carolina at Chapel Hill states:

“It shall be the responsibility of every student at the University of North Carolina at Chapel Hill to obey and to support the enforcement of the honor code, which prohibits lying, cheating, or stealing when these actions involve academic processes or University, student, or academic personnel acting in an official capacity.”

I will report any honor code violation to the [Office of Student Conduct](#).

For this course:

- ▶ You are permitted and encouraged to seek advice and suggestions from other class members on the written assignments, unless specifically instructed otherwise. This may include exchanging drafts for feedback and/or proofreading.
- ▶ In all written and presented work, you must cite or otherwise fully attribute all ideas, data, and other information that are not your own. This includes information presented in tables, graphs, appendices, etc.

Safety at Carolina

I care about your safety and recognize that you cannot fully commit to this course if you do not feel safe.

If you are impacted by discrimination, harassment, interpersonal (relationship) violence, sexual violence, sexual exploitation, or stalking, I encourage you to seek resources on campus or in the community.

Please contact the following campus resources to discuss your specific needs:

- ▶ Director of Title IX Compliance (Adrienne Allison – Adrienne.allison@unc.edu)
- ▶ Report and Response Coordinators in the Equal Opportunity and Compliance Office (reportandresponse@unc.edu)
- ▶ Counseling and Psychological Services (caps@unc.edu; confidential)
- ▶ Gender Violence Services Coordinators (gvsc@unc.edu; confidential)
- ▶ Additional resources are available at safe.unc.edu

I value the perspectives of individuals from all backgrounds reflecting the diversity of our students and my goal is to create a **safe space for everyone in this class**. I broadly define diversity to include race, gender identity,

national origin, ethnicity, religion, social class, age, sexual orientation, political background, and physical and learning ability. **Please let me know if there is anything I can do to improve. I appreciate suggestions.**

Accessibility

The University of North Carolina – Chapel Hill facilitates the implementation of reasonable accommodations, including resources and services for students with disabilities, chronic medical conditions, temporary disability or pregnancy complications resulting in difficulties with accessing learning opportunities. All accommodations are coordinated through the Accessibility Resources and Service Office.

If you need accommodations, please contact ARS as early in the semester as possible.

- ▶ Visit accessibility.unc.edu
- ▶ Call 919-962-8300
- ▶ Email accessibility@unc.edu

Resources

Our purpose as professors is to help you to excel in this learning environment. Should you need further assistance beyond the help of the professor, please consult the following on-campus resources:

- ▶ **The Writing Center** provides one-on-one assistance to students. To make an appointment, browse the Writing Center's online resources, or submit a draft online. They have additional useful information, such as handouts on how to cite online. writingcenter.unc.edu
- ▶ **The Learning Center** offers individual consultations, peer tutoring, academic coaching, test prep programming, study skills workshops, and peer study groups. learningcenter.unc.edu
- ▶ **Campus Health** provides ambulatory primary medical care, mental health services and wellness programs along with selected specialty services. campushealth.unc.edu

Course outline

Module	Topic	Contents
1	Foundations in climate change impacts and adaptation	<ul style="list-style-type: none">• Hazard, exposure, and vulnerability• Future climate and socioeconomic scenarios• Uncertainty, downscaling, and other issues in climate modeling
2	Extreme heat and drought	<ul style="list-style-type: none">• Projections and uncertainties; climate change detection and attribution• Impacts• Human drivers and responses
3	Inland floods and wildfires	<ul style="list-style-type: none">• Projections and uncertainties• Impacts• Human drivers and responses• Spotlight: insurance and the financial sector
4	Coastal hazards	<ul style="list-style-type: none">• Projections and uncertainties• Impacts• Human drivers and responses