

# URP 6445: Planning for Climate Change

## Course Overview

**Instructor:** Dr. Zhong-Ren Peng

**Contact:** ARCH 462, zpeng@ufl.edu, (352) 294-1491

**Term:** Fall 2024

**Credit:** 3

**Class Location:** RNK 0230

**Meeting Time:** M | Period 4 (10:40 AM - 11:30 AM) and F | Period 3 – 4 (9:35 AM - 11:30 AM)

**Office Hours:** Monday 1:30 – 3:30 PM

**Teaching Assistant (TA):** Yanghe Liu

**Contact:** liuyanghe@ufl.edu

**TA Office Hours:** Friday: 11:30 AM to 1:30PM

Office location: ARCH 135

### Required Text:

- There is no required textbook for this course.
- Optional textbook: *Climate and Disaster Resilience in Cities*, 2011, Shaw and Sharma (Editors). Bingley, UK: Emerald Group Publishing Limited, ISBN: 978-0-85724-391-5.
- Other readings as assigned

### Prerequisite Knowledge & Skills:

- None. Some basic knowledge and experience in GIS are preferred but not required.

### Purpose of the Course:

- This course focuses on understanding the relationship between human activities and climate change and what planning can do to mitigate and adapt to climate change. Specifically, the course will help develop an understanding of the science and scenarios of climate change, the impacts of climate change on the built and natural environment, the mitigation measures, and adaptive planning approaches to adapt to climate change and build resilient communities.

### Course Goals & Objectives:

- By the end of this course, students will:
  - Understand the science and scenarios of climate change
  - Be able to analyze the impacts of climate change (vulnerability assessment)
  - Develop different adaptation measures for a study area

- Estimate the costs and benefits of adaptation measures

## Course Policies

### Attendance Policy:

- Students are expected to attend all classes and labs and to stay until the class/lab period ends. Role will be taken randomly; more than 3 unexcused absences will result in the loss of a letter grade.
- In the case of illness or a family emergency, a schedule for the completion of make-up work must be determined with the instructor as soon as possible upon a student's return to class. Failure to comply with the agreed upon schedule will result in a failing grade for that project.

### Assignment & Quiz/Exam Policy:

- Students MUST follow the University's policy regarding unauthorized use of materials (i.e., cheating), prohibited collaboration, and the use of copyrighted materials.
- Students are responsible for reading and abiding by the University's student code of conduct (<http://www.dso.ufl.edu/sccr/honorcodes/conductcode.php>) and the University Honor Code. Under the Student Honor Code, "on all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: 'On my honor, I have neither given nor received unauthorized aid in doing this assignment'" (<http://www.dso.ufl.edu/judicial/honorcode.php>).
- In particular, there are rules governing plagiarism and unauthorized collaboration. If you directly quote someone or use an idea from another source, you must attribute that idea or those words to an original author. If you are unclear about what constitutes plagiarism, please make an appointment with me to discuss this. You can also consult the above website and the graduate catalog for further information.
- In the context of this course, if you directly quote someone or use an idea from another source even if it is your own previously submitted work, you must attribute that idea or words. Failure to follow the rules regarding Integrity in Graduate School may result in a failure in this course and possible disciplinary action under the Judicial Process for Academic Honesty Violations. If you are unclear about what constitutes plagiarism or other aspects of academic honesty, please make an appointment with the instructor to discuss this.
- The following are some examples that are considered to be academic dishonesty:
  - Copying graphics or texts from any sources for your report without crediting the original source;
  - Representing someone else's work as your own;
  - Allowing someone else to represent your work as his/her own;
  - Multiple submissions of the same or similar work without prior approval;
  - Cheating in exams (e.g., looking at books or notes in a closed-book examination).

- Falsifying information such as changing or leaving out data, such as manipulating or misreporting statistics for a research project; altering work after it has been submitted; hiding reference materials, etc.

**Grading Policies:**

- **Grading will be based on the following components:**
  - 30% assignments and class participation
  - 30% exam
  - 40% final project.
- Each assignment, exam and final project will be first assigned point grades, and then converted into the letter grade based on the grade scale below.
- For greater detail, see the Registrar’s Grade Policy regulations at <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.

Percentage or points earned in class	93%-100%	90%-92.9%	87%-89.9%	83%-86.9%	80%-82.9%	77%-79.9%	73%-76.9%	70%-72.9%	67%-69.9%	63%-66.9%	60%-62.9%	Below 60%
Letter grade equivalent	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F

Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E	WF	I	NG	S-U
Grade Points	4.0	3.67	3.33	3.0	2.67	2.33	2.0	1.67	1.33	1.0	0.67	0	0.0	0	0.0	0.0

**Make-up Policy:**

- Students will be permitted a reasonable amount of time to make up the material or activities covered in their absence due to a true emergency, but the instructor must be informed of the legitimate absence ahead of time with proof.

**Lateness Policy:**

- A half letter grade will be deducted if the project report is late for one day.
- A full letter grade will be deducted if the project report is late for one to two days, and so on.
- No assignment will be accepted if turned in after three days.

**Course Evaluations:**

- Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>.
- Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under

GatorEvals, or via <https://bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/publicresults/>.

## SPECIAL NOTE REGARDING ADVANCED AUTOMATION TOOLS (E.G. CHATGPT)

Students are expected to use technology in this class; technology can be as useful for writers as a calculator is for mathematicians. Some tools such as styles, automated cross-references, and spell check in Microsoft Word may already be familiar to you. Other tools, such as ChatGPT for summarizing articles, may be less familiar. These tools require understanding, practice, and quality-control.

If students choose to utilize automated tools (e.g. artificial intelligence, learning tools like ChatGPT) the content and utilization must be appropriately cited. Further, these tools should not be used in a copy-paste fashion; at best, they can be attributed as a collaborator. Note that assignments, unless otherwise noted, must be completed individually – i.e. products of your own, unaided mind.

Failure to properly use, cite, or collaborate with automation tools is violation of the academic honesty policies. All submissions are subject to plagiarism and aid checks.

## UF Policies

### **University Policy on Accommodating Students with Disabilities:**

- Students requesting accommodation for disabilities must first register with the Dean of Students Office (<http://www.dso.ufl.edu/drc/>).
- The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking the quizzes or exams.
- Accommodations are not retroactive; therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations

### **University Policy on Academic Misconduct:**

- Academic honesty and integrity are fundamental values of the University community. Students should be sure that they understand the UF Student Honor Code (<http://www.dso.ufl.edu/students.php>).

### **Netiquette & Communication Courtesy:**

- All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats (<http://teach.ufl.edu/docs/NetiquetteGuideforOnlineCourses.pdf>).

## Getting Help

### Technical Difficulties:

- For issues with technical difficulties for E-learning, please contact the UF Help Desk at:
  - Learning-support@ufl.edu
  - (352) 392-HELP - select option 2
  - <https://lss.at.ufl.edu/help.shtml>
- Any requests for make-ups due to technical issues MUST be accompanied by the ticket number received from LSS when the problem was reported to them. The ticket number will document the time and date of the problem. You MUST e-mail your instructor within 24 hours of the technical difficulty if you wish to request a make-up.
- Other resources are available at <http://www.distance.ufl.edu/getting-help> for:
  - Counseling and Wellness resources
  - Disability resources
  - Resources for handling student concerns and complaints
  - Library Help Desk support
- Should you have any complaints with your experience in this course please visit <http://www.distance.ufl.edu/student-complaints> to submit a complaint.

### The U Matter, We Care Initiative:

- Your well-being is important to the University of Florida.
- The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need.
- If you or a friend is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575.
- The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

## Course Schedule & Assignments

Date	Week 1
Topics	Course Overview, Sustainability and Resilience
Reading	1. IPCC (2023). <i>AR6 Synthesis Report: Climate Change 2023</i> . <a href="https://www.ipcc.ch/report/ar6/syr/">https://www.ipcc.ch/report/ar6/syr/</a> 2. EPA (2024). <i>Climate Change</i> . <a href="https://www.epa.gov/climate-change">https://www.epa.gov/climate-change</a>

	<ol style="list-style-type: none"> <li>3. Resilience and sustainability. (2019). <i>Nature Sustainability</i>, 2, 249. <a href="https://doi.org/10.1038/s41893-019-0284-4">https://doi.org/10.1038/s41893-019-0284-4</a></li> <li>4. Marchese et al. (2018). Resilience and sustainability: Similarities and differences in environmental management applications. <i>Science of The Total Environment</i>, 613–614, 1275-1283. <a href="https://doi.org/10.1016/j.scitotenv.2017.09.086">https://doi.org/10.1016/j.scitotenv.2017.09.086</a></li> <li>5. Matarrita-Cascante et al. (2022). Conceptualizing community resilience: Revisiting conceptual distinctions. In <i>Community Development for Times of Crisis</i> (1st ed., pp. 22). Routledge. <a href="https://doi.org/10.4324/9781003212652-4">https://doi.org/10.4324/9781003212652-4</a></li> <li>6. Elmqvist et al. (2019). Sustainability and resilience for transformation in the urban century. <i>Nature Sustainability</i>, 2, 267–273. <a href="https://doi.org/10.1038/s41893-019-0250-1">https://doi.org/10.1038/s41893-019-0250-1</a></li> <li>7. Jones et al. (2021). Advancing resilience measurement. <i>Nature Sustainability</i>, 4, 288–289. <a href="https://doi.org/10.1038/s41893-020-00642-x">https://doi.org/10.1038/s41893-020-00642-x</a></li> </ol>
<b>Assignment #1</b>	<p>Write an essay to answer the following questions:</p> <ul style="list-style-type: none"> <li>• What is sustainability, and how can it be defined and quantified?</li> <li>• What is resilience, and how can it be defined and quantified?</li> <li>• What are the similarities and differences between sustainability and resilience?</li> </ul> <p>Two pages, single-spaced (excluding references) essay. At least five references are required. The assignment is due before the next class.</p> <p>Please note that all written assignments should be in essay format, not Q&amp;A. Your essay must include a standard “Introduction,” “Main Body,” and “Conclusion.” However, within the essay, you must address all the assigned questions. You may use ChatGPT to check grammar, but you are not allowed to use it to answer the questions. I will verify the authenticity of your work.</p>

Date	Week 2
Topics	Physical Science Basis
Reading	<ol style="list-style-type: none"> <li>1. IPCC (2023). <i>Climate Change 2023 Synthesis Report: Summary for Policymakers</i>. <a href="https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf">https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf</a></li> <li>2. EPA (2024). <i>Climate Change Science</i>. <a href="https://www.epa.gov/climatechange-science">https://www.epa.gov/climatechange-science</a></li> <li>3. U.S. Global Change Research Program. (2009). <i>Climate Literacy: The Essential Principles of Climate Science</i>. Retrieved from <a href="https://www.globalchange.gov/reports/climate-literacy-essential-principles-climate-science">https://www.globalchange.gov/reports/climate-literacy-essential-principles-climate-science</a></li> <li>4. NOAA (2024). <i>Teaching Climate</i>. <a href="https://www.climate.gov/teaching">https://www.climate.gov/teaching</a></li> </ol>
<b>Assignment #2</b>	<p>Write an essay to answer the following questions:</p> <ul style="list-style-type: none"> <li>• What is climate change and climate variability?</li> <li>• What causes climate change (particularly, global warming &amp; sea level rise)?</li> <li>• What is the basic science to explain climate change?</li> </ul>

	Two-three pages, single-spaced (excluding references) essay. At least five references are required. The assignment is due before the next class.
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Date	Week 3
Topics	Human Activities and Climate Change
Reading	<ol style="list-style-type: none"> <li>1. IPCC (2019). <i>Special Report on Climate Change and Land: Summary for policymakers</i>. <a href="https://www.ipcc.ch/srccl/chapter/summary-for-policymakers/">https://www.ipcc.ch/srccl/chapter/summary-for-policymakers/</a></li> <li>2. IPCC (2023). <i>Sixth Assessment Report. Chapter 6: Cities, settlements and key infrastructure</i>. <a href="https://www.ipcc.ch/report/ar6/wg2/chapter/chapter-6/">https://www.ipcc.ch/report/ar6/wg2/chapter/chapter-6/</a></li> <li>3. Ewing et al. (2007). <i>Executive Summary. Growing Cooler: The Evidence on Urban Development and Climate Change</i>. Urban Land Institute. Chicago, IL. <a href="https://www.nrdc.org/sites/default/files/cit_07092401a.pdf">https://www.nrdc.org/sites/default/files/cit_07092401a.pdf</a></li> <li>4. EPA (2023). <i>Climate Change Impacts on Freshwater Resources</i>. <a href="https://www.epa.gov/climateimpacts/climate-change-impacts-freshwater-resources">https://www.epa.gov/climateimpacts/climate-change-impacts-freshwater-resources</a></li> <li>5. Urban et al. (2024). Interactions between climate change and urbanization will shape the future of biodiversity. <i>Nature Climate Change</i>, 14, 436–447. <a href="https://doi.org/10.1038/s41558-024-01996-2">https://doi.org/10.1038/s41558-024-01996-2</a></li> </ol>
Assignment #3	<p>Write an essay to answer the following questions:</p> <ul style="list-style-type: none"> <li>• How do human activities affect climate change? Please provide evidence using detailed references.</li> </ul> <p>Two pages, single-spaced (excluding references) essay. At least five references are required. The assignment is due before the next class.</p>

Date	Week 4
Topics	Climate Change Impacts and Vulnerability Assessment
Reading	<ol style="list-style-type: none"> <li>1. IPCC (2022). <i>Climate Change 2022: Impacts, Adaptation and Vulnerability</i>. <a href="https://www.ipcc.ch/report/ar6/wg2/">https://www.ipcc.ch/report/ar6/wg2/</a></li> <li>2. Bruun, P. (1988). The Bruun Rule of Erosion by Sea-Level Rise: A Discussion on Large-Scale Two- and Three-Dimensional Usages. <i>Journal of Coastal Research</i>, 4(4), 627–648. <a href="http://www.jstor.org/stable/4297466">http://www.jstor.org/stable/4297466</a></li> <li>3. Nasiri et al. (2016). An overview to flood vulnerability assessment methods. <i>Sustainable Water Resources Management</i>, 2, 331–336. <a href="https://doi.org/10.1007/s40899-016-0051-x">https://doi.org/10.1007/s40899-016-0051-x</a></li> <li>4. Adger et al. (2013). Cultural dimensions of climate change impacts and adaptation. <i>Nature Climate Change</i>, 3, 112–117. <a href="https://doi.org/10.1038/nclimate1666">https://doi.org/10.1038/nclimate1666</a></li> <li>5. Nicholls, R. J., &amp; Cazenave, A. (2010). Sea-level rise and its impact on coastal zones. <i>Science</i>, 328, 1517-1520. <a href="https://doi.org/10.1126/science.1185782">https://doi.org/10.1126/science.1185782</a></li> <li>6. Griggs, G., &amp; Reguero, B. G. (2021). Coastal adaptation to climate change and sea-level rise. <i>Water</i>, 13, 2151. <a href="https://doi.org/10.3390/w13162151">https://doi.org/10.3390/w13162151</a></li> </ol>
Assignment #4	<p>Write an essay to answer the following questions:</p> <ul style="list-style-type: none"> <li>• What is vulnerability, and how to define and quantify different aspects of vulnerability?</li> </ul>

	<ul style="list-style-type: none"> <li>• What is Bruun Rule of Erosion, and why is it controversial?</li> </ul> <p>Two-three pages, single-spaced (excluding references) essay. At least five references are required. The assignment is due before the next class.</p>
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Date	Week 5
Topics	Climate Change Mitigation Policies and Planning
Reading	<ol style="list-style-type: none"> <li>1. IPCC (2022). <i>Climate Change 2022: Mitigation of Climate Change</i>. <a href="https://www.ipcc.ch/report/ar6/wg3/">https://www.ipcc.ch/report/ar6/wg3/</a></li> <li>2. Deetjen et al. (2018). Review of climate action plans in 29 major U.S. cities: Comparing current policies to research recommendations. <i>Sustainable Cities and Society</i>, 41, 711-727. <a href="https://doi.org/10.1016/j.scs.2018.06.023">https://doi.org/10.1016/j.scs.2018.06.023</a></li> <li>3. Fekete et al. (2021). A review of successful climate change mitigation policies in major emitting economies and the potential of global replication. <i>Renewable and Sustainable Energy Reviews</i>, 137, Article 110602. <a href="https://doi.org/10.1016/j.rser.2020.110602">https://doi.org/10.1016/j.rser.2020.110602</a></li> <li>4. Knutti et al. (2016). A scientific critique of the two-degree climate change target. <i>Nature Geoscience</i>, 9, 13–18. <a href="https://doi.org/10.1038/ngeo2595">https://doi.org/10.1038/ngeo2595</a></li> </ol>
Assignment #5	<p>Write an essay to answer the following questions:</p> <ul style="list-style-type: none"> <li>• What is climate change mitigation?</li> <li>• What is a climate action plan and what is the process of making a climate action plan?</li> </ul> <p>Two-three pages, single-spaced (excluding references) essay. At least five references are required. The assignment is due before the next class.</p>

Date	Week 6
Topics	Climate Change Adaptation Policies and Planning
Reading	<ol style="list-style-type: none"> <li>1. IPCC (2022). <i>Impacts, Adaptation and Vulnerability</i>. <a href="https://www.ipcc.ch/report/ar6/wg2/">https://www.ipcc.ch/report/ar6/wg2/</a></li> <li>2. EPA (2024). <i>Climate Adaptation Plans</i>. <a href="https://www.epa.gov/climate-adaptation/climate-adaptation-plans">https://www.epa.gov/climate-adaptation/climate-adaptation-plans</a></li> <li>3. EPA (2023). <i>Planning for Climate Change Adaptation</i>. <a href="https://www.epa.gov/arc-x/planning-climate-change-adaptation">https://www.epa.gov/arc-x/planning-climate-change-adaptation</a></li> <li>4. Shi, L., &amp; Moser, S. (2021). Transformative climate adaptation in the United States: Trends and prospects. <i>Science</i>, 372, Article eabc8054. <a href="https://doi.org/10.1126/science.abc8054">https://doi.org/10.1126/science.abc8054</a></li> <li>5. Woodruff, S., Stults, M. (2016). Numerous strategies but limited implementation guidance in US local adaptation plans. <i>Nature Clim Change</i>, 6, 796–802. <a href="https://doi.org/10.1038/nclimate3012">https://doi.org/10.1038/nclimate3012</a></li> <li>6. Grannis, J. (2011). <i>Adaptation tool kit: Sea level rise and coastal land use</i>. Georgetown Climate Center. <a href="https://www.georgetownclimate.org/files/report/Adaptation_Tool_Kit_SLR.pdf">https://www.georgetownclimate.org/files/report/Adaptation_Tool_Kit_SLR.pdf</a></li> </ol>



	7. Fu, X., & Li, C. (2022). How resilient are localities planning for climate change? An evaluation of 50 plans in the United States. <i>Journal of Environmental Management</i> , 318, Article 115493. <a href="https://doi.org/10.1016/j.jenvman.2022.115493">https://doi.org/10.1016/j.jenvman.2022.115493</a>
<b>Assignment #6</b>	Write an essay to answer the following questions: <ul style="list-style-type: none"> <li>• What is climate change adaptation?</li> <li>• What is the process of making a climate change adaptation plan?</li> </ul> Two-three pages, single-spaced (excluding references) essay. At least five references are required. The assignment is due before the next class.

Date	Week 7
Topics	Geoplan Sea Level Scenario Sketch Planning Tool
Reading	1. University of Florida GeoPlan Center (2024). <i>Sea Level Scenario Sketch Planning Tool</i> . <a href="https://sls.geoplan.ufl.edu/">https://sls.geoplan.ufl.edu/</a>
Note	Guest Lecture

Date	Week 8
Topics	<b>Written Exam</b>

Date	Week 9
Topics	Local Adaptation to Climate Effects: Sea-Level Rise
Reading	1. PLACE: SLR (n.d.). <i>Program for Local Adaptation to Climate Effects: Sea Level Rise</i> . <a href="https://placeslr.org/about/place-slr/">https://placeslr.org/about/place-slr/</a>
Note	Guest Lecture
Project	Project Abstract Due. Two pages, single-spaced, detailing what project you plan to do, what problems to address, data and methodology, and expected results.

Date	Week 10
Topics	Resilience in Miami-Dade County
Reading	1. Miami-Dade County (2024). <i>Strengthening Resilience in Miami-Dade County</i> . <a href="https://www.miamidade.gov/global/economy/resilience/home.page">https://www.miamidade.gov/global/economy/resilience/home.page</a> 2. TBRPC (2023). <i>Resiliency Planning</i> . <a href="https://tbrpc.org/resiliency-planning/">https://tbrpc.org/resiliency-planning/</a> 3. Wdowinski et al. (2016). Increasing flooding hazard in coastal communities due to rising sea level: Case study of Miami Beach, Florida. <i>Ocean &amp; Coastal Management</i> , 126, 1-8. <a href="https://doi.org/10.1016/j.ocecoaman.2016.03.002">https://doi.org/10.1016/j.ocecoaman.2016.03.002</a>

Date	Week 11
Topics	Florida Resilience and Coastal Protection
Reading	1. Florida Department of Environmental Protection (2024). <i>Office of Resilience and Coastal Protection Programs</i> . <a href="https://floridadep.gov/rcp">https://floridadep.gov/rcp</a>

Date	Week 12
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Topics	Transportation Resilience
Reading	<ol style="list-style-type: none"> <li>1. FHWA (2017). <i>Vulnerability Assessment and Adaptation Framework, 3rd Edition</i>. <a href="https://www.fhwa.dot.gov/environment/sustainability/resilience/adaptation_framework/">https://www.fhwa.dot.gov/environment/sustainability/resilience/adaptation_framework/</a></li> <li>2. FDOT (2024). <i>Previous Plans: 2045 Florida Transportation Plan</i>. <a href="https://www.floridaftp.com/resources">https://www.floridaftp.com/resources</a></li> <li>3. EPA (2024). <i>Fast Facts on Transportation Greenhouse Gas Emissions</i>. <a href="https://www.epa.gov/greenvehicles/fast-facts-transportation-greenhouse-gas-emissions">https://www.epa.gov/greenvehicles/fast-facts-transportation-greenhouse-gas-emissions</a></li> <li>4. Metroplan Orlando (2024). <i>2045 Metropolitan Transportation Plan</i>. <a href="https://metroplanorlando.gov/plans/metropolitan-transportation-plan/">https://metroplanorlando.gov/plans/metropolitan-transportation-plan/</a></li> </ol>

Date	Week 13
Topics	Economic Analysis of Adaptive Planning (Introduction to Input-Output model and Computable General Equilibrium Model)
Reading	<ol style="list-style-type: none"> <li>1. Hallegatte et al. (2011). The economics of climate change impacts and policy benefits at city scale: a conceptual framework. <i>Climatic Change</i> 104, 51–87. <a href="https://doi.org/10.1007/s10584-010-9976-5">https://doi.org/10.1007/s10584-010-9976-5</a></li> <li>2. Hsiang et al. (2017). Estimating economic damage from climate change in the U.S. <i>Science</i>, 356(6345), 1362-1369. <a href="https://doi.org/10.1126/science.aal4369">https://doi.org/10.1126/science.aal4369</a></li> <li>3. European Environment Agency (2023). <i>Assessing the costs and benefits of climate change adaptation</i>. <a href="https://www.eea.europa.eu/publications/assessing-the-costs-and-benefits-of">https://www.eea.europa.eu/publications/assessing-the-costs-and-benefits-of</a></li> <li>4. Sovacool et al. (2015). The political economy of climate adaptation. <i>Nature Clim Change</i> 5, 616–618. <a href="https://doi.org/10.1038/nclimate2665">https://doi.org/10.1038/nclimate2665</a></li> <li>5. An, K., et al. (2023). Title of the article. <i>Environmental Research Letters</i>, 18, Article 033002. <a href="https://doi.org/10.1088/1748-9326/acbbe2">https://doi.org/10.1088/1748-9326/acbbe2</a></li> </ol>
Report	Progress project report due (at least 10 pages, single spaced, excluding references)

Date	Week 14
Topics	Legal Issues of Adaptation Planning
Reading	<ol style="list-style-type: none"> <li>1. Craig, R. K. (2022). Climate adaptation law and policy in the United States. <i>Frontiers in Marine Science</i>, 9, Article 1059734. <a href="https://doi.org/10.3389/fmars.2022.1059734">https://doi.org/10.3389/fmars.2022.1059734</a></li> <li>2. McGinn, A. (2023). <i>Climate Adaptation: A Review of Federal Legislation Enacted Since 2017</i>. EESI. <a href="https://www.eesi.org/articles/view/climate-adaptation-a-review-of-federal-legislation-enacted-since-2017">https://www.eesi.org/articles/view/climate-adaptation-a-review-of-federal-legislation-enacted-since-2017</a></li> <li>3. Hall, N., &amp; Persson, Å. (2018). Global climate adaptation governance: Why is it not legally binding? <i>European Journal of International Relations</i>, 24(3), 540-566. <a href="https://doi.org/10.1177/1354066117725157">https://doi.org/10.1177/1354066117725157</a></li> </ol>

	<p>4. McGuire, C. J., &amp; Mohan, D. (2018). Examining legal and regulatory barriers to climate change adaptation in the coastal zone of the United States. <i>Cogent Environmental Science</i>, 4(1). <a href="https://doi.org/10.1080/23311843.2018.1491096">https://doi.org/10.1080/23311843.2018.1491096</a></p> <p>5. Ruhl, J. B. (2011). General design principles for resilience and adaptive capacity in legal systems - With applications to climate change adaptation. <i>North Carolina Law Review</i>, 89, 1373. <a href="https://scholarship.law.unc.edu/nclr/vol89/iss5/3">https://scholarship.law.unc.edu/nclr/vol89/iss5/3</a></p>
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Date	Week 15
Topics	Climate Intervention
Reading	<p>1. National Research Council. (2015). <i>Climate intervention: Carbon dioxide removal and reliable sequestration</i>. Washington, DC: The National Academies Press. <a href="https://doi.org/10.17226/18805">https://doi.org/10.17226/18805</a></p> <p>2. National Research Council. (2015). <i>Climate Intervention: Reflecting Sunlight to Cool Earth</i>. Washington, DC: The National Academies Press. <a href="https://doi.org/10.17226/18988">https://doi.org/10.17226/18988</a>.</p> <p>3. Baum et al. (2024). Public perceptions and support of climate intervention technologies across the Global North and Global South. <i>Nat Commun</i> 15, 2060. <a href="https://doi.org/10.1038/s41467-024-46341-5">https://doi.org/10.1038/s41467-024-46341-5</a></p>

Date	Week 16
Topics	Final project presentation

Date	Week 17
Topics	Final project due

Disclaimer: This syllabus represents my current plans and objectives. As we go through the semester, those plans may need to change to enhance the class learning opportunity. Such changes, communicated clearly, are not unusual and should be expected.