URP 6445 PLANNING FOR CLIMATE CHANGE

URP 6445

3 CREDITS

SPRING 2021

CLASS LOCATION: ARCH 423

CLASS MEETING TIME(S): WEDNESDAY, PERIOD 7 - 9 (1:55 PM - 4:55 PM)

INSTRUCTOR: *Dr. Zhong-Ren Peng*

[ARCH 462, zpeng@ufl.edu, 352-294-1491]

OFFICE HOURS: *Office Hours:* Monday 1:30 AM—3:30 PM or by appointment

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 AND SKILLS:**

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

PURPOSE OF COURSE: *This course focuses on understanding the relationship between human activities and climate change and what can planning 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 AND/OR 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*

****INSTRUCTIONAL METHODS:** *We will adopt a combination of lectures and hands-on project approach in the learning process. The project will use actual data from Florida to estimate possible impacts of climate change based on several climate change scenarios, develop different adaptation measures, estimate the costs and benefits of adaptation measures, and make suggestions for decision makers.*

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 AND 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.*

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 proofs.*

LATENESS POLICY: 15 points will be deducted if the required assignment is turned in late for up to one day. 30 points will be deducted if the required assignment is turned in late for one to two days. 50 points will be deducted if the required assignment is turned in late for two to three days. No assignment is accepted if required assignment is turned in after three days.

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.

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 at 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:

For issues with technical difficulties for E-learning in Sakai, 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 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 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/.

GRADING POLICIES:

Grading will be based on the following components: 30% assignments and class participation, 30% exam and 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 following grade scale. Late assignment without prior approval will be reduced by one letter grade.

Tasks	Points or percentage
Assignments *and class participation*	30%
Exam	30%
Final Project	40%

GRADING SCALE: *For greater detail, see the Registrar's Grade Policy regulations at https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx.*

University of Florida Grade Policy

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

COURSE SCHEDULE:

Date	Topic	Reading
Week 1 8/25/2021	Course Overview, Climate Change Science and Scenarios	(1) IPCC 2021. Climate Change 2021: Synthesis Report. https://www.ipcc.ch/assessment-report/ar6/ (2) https://www.epa.gov/climate-change
Week 2 9/1/2021	Physical Science Basis	IPCC 2021 report, Summary for Policy Makers: https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf
Week 3 9*/8/2021*	Human Activities and Climate Change	(1) IPCC report: Climate Change and Land: Summary for Policymakers — Special Report on Climate Change and Land (ipcc.ch) (2) IPCC report fifth assessment: Climate Change and Land https://www.ipcc.ch/srccl/ (3) Ewing et al., 2007. Executive Summary. Growing Cooler:

		The Evidence on Urban Development and Climate Change. Urban Land Institute. Chicago, IL. (4) Vörösmarty, C. J., Green, P., Salisbury, J., & Lammers, R. B. (2000). Global water resources: vulnerability from climate change and population growth. Science, 289(5477), 284-288. http://science.sciencemag.org/content/sci/289/5477/284.full.pdf (5) Grimm, N. B., Faeth, S. H., Golubiewski, N. E., Redman, C. L., Wu, J., Bai, X., & Briggs, J. M. (2008). Global change and the ecology of cities. Science, 319(5864), 756-760.
Week 4 9/15/2021	Climate Change Impacts and Vulnerability Assessment	(1) BRUUN, P. 1988. The Bruun Rule of Erosion by sea-level rise: A discussion on large-scale two and three-dimensional usages. Journal of Coastal Research, 4(4), 627-648. Charlottesville (Virginia). ISSN 0749-0208. (2) Balica, S. F., Wright, N. G., & van der Meulen, F. (2012). A flood vulnerability index for coastal cities and its use in assessing climate change impacts. *Natural Hazards*, *64*(1), 73-105. (3) Adger, W. N., Barnett, J., Brown, K., Marshall, N., & O'Brien, K. (2013). Cultural dimensions of climate change impacts and adaptation. *Nature Climate Change*, *3*(2), 112-117. (4) Nicholls, R. J., & Cazenave, A. (2010). Sea-level rise and its impact on coastal zones. Science, 328(5985), 1517-1520. (5) Jacob, et al, 2007. Vulnerability of the New York City metropolitan area to coastal hazards, including sea-level rise: Inferences for urban coastal risk management and adaptation policies. In Managing Coastal Vulnerability. Elsevier, pp. 139-156.
Week 5 9/22/2021 Project Abstract due (1-2 pages)	Climate Change Mitigation Policies and Planning	(1) AR5 Climate Change 2014: Mitigation of Climate Change: https://www.ipcc.ch/report/ar5/wg3/ (2) Crane and Landis, 2010. Introduction to the Special Issue: Planning for Climate Change: Assessing Progress and Challenges. Journal of the American Planning Association. Vol. 76, No. 4. (3) Millard-Ball, 2012. Do City Climate Plans Reduce Emissions? Journal of Urban Economics. Vol. 71. 289-311. (4) Reckien et al., 2014. Climate Change Response in Europe: What's the Reality? Analysis of Adaptation and Mitigation Plans from 200 Urban Areas in 11 Countries. Climatic Change. Vol. 122, 331-340.

		(4) Otto et al., 2015. Embracing the Uncertainty in Climate Change Policy. Nature Climate Change. DOI: 10.1038/NCLIMATE2716.
Week 6 9/29/2021	Climate Change Adaptation Policies and Planning	(1) AR5 Climate Change 2014: Impacts, Adaptation, and Vulnerability: https://www.ipcc.ch/report/ar5/wg2/ (2) *Macintosh, A., Foerster, A., & McDonald, J. (2015). Policy design, spatial planning and climate change adaptation: a case study from Australia. Journal of Environmental Planning and Management, 58(8), 1432-1453.* (3) *Romsdahl, R. J., Wood, R. S., & Hultquist, A. (2015). Planning for climate change adaptation in natural resources management: Challenges to policy-making in the US great plains. Journal of Environmental Policy & Planning,17(1), 25-43.* (4) *Birch, E. L. (2014). A Review of "Climate Change 2014: Impacts, Adaptation, and Vulnerability" and "Climate Change 2014: Mitigation of Climate Change". Journal Of The American Planning Association, 80(2), 184-185.* (5*) Stamos, I., Mitsakis, E., & Grau, J. (2015). Roadmaps for adaptation measures of transportation to climate change. Transportation Research Record, 2532, 1-12. doi:10.3141/2532-01* (6) Grannis, J. 2011. Adaptation tool kit: sea level rise and coastal land use. Washington, D.C.: Georgetown Climate Center. Available online at: http://www.georgetownclimate.org/sites/default/files/Adaptation_Tool_Kit_SLR.pdf.
Week 7 10/6/2021	G*eoplan Sea Level Scenario Sketch Planning Tool*	https://sls.geoplan.ufl.edu/
Week 8 10/13/2021	Program for Local Adaptation to Climate Effects: Sea-Level Rise (PLACE: SLR)	https://placeslr.org/

Week 9 *10/20/2021*	Florida Resilience and Coastal Protection	https://floridadep.gov/rcp
Week 10 *10/27/2021*	Resilience in Miami-Dade County	https://www.miamidade.gov/global/economy/resilience/home.page
Week 11 *11/3/2021*	Transportation Resilience	https://www.fhwa.dot.gov/environment/sustainability/resilience/publications/bcrt_brochure.cfm https://www.fdot.gov/planning/policy/resilience/default.shtm U.S. Department of Transportation, 2010. Executive Summary in Report to Congress. Transportation's Role in Reducing U.S. Greenhouse Gas Emissions. Volume 1: Synthesis Report. Washington, D.C.
Week 12 *11/10/2021* Progress report due (at least 15 pages)	E*conomic Analysis of* Adaptive Planning	Introduction to Input-Output model and Computable General Equilibrium (CGE) models, and their applications in adaptation planning. (1) Neumann, J. E., Emanuel, K., Ravela, S., Ludwig, L., Kirshen, P., Bosma, K., & Martinich, J. (2015). Joint effects of storm surge and sea-level rise on US Coasts: new economic estimates of impacts, adaptation, and benefits of mitigation policy. *Climatic Change*, *129*(1-2), 337-349. (2) Hsiang, S., Kopp, R., Jina, A., Rising, J., Delgado, M., Mohan, S., ... & Larsen, K. (2017). Estimating economic damage from climate change in the United States. *Science*, *356*(6345), 1362-1369. (3) Watkiss, P., Hunt, A., Blyth, W., & Dyszynski, J. (2015). The use of new economic decision support tools for adaptation assessment: A review of methods and applications, towards guidance on applicability. *Climatic Change*, *132*(3), 401-416. (4) Hauer, M. E., Evans, J. M., & Mishra, D. R. (2016). Millions projected to be at risk from sea-level rise in the continental United States. *Nature Climate Change*, *6*(7), 691.

		(5) Sovacool, B. K., Linnér, B. O., & Goodsite, M. E. (2015). The political economy of climate adaptation. *Nature Climate Change*, *5*(7), 616.
Week 13 11/17/2021	Legal Issues of Adaptation Planning	(1) Craig, R. K. (2010). 'Stationarity is Dead'-Long Live Transformation: Five Principles for Climate Change Adaptation Law. Harvard Environmental Law Review, 34(1), 9-75. (2) Ruhl, J. B. (2011). General design principles for resilience and adaptive capacity in legal systems: applications to climate change adaptation law.North Carolina Law Review. (3) City of Annapolis. 2011. Regulatory responses to sea level rise and storm surge inundation. Annapolis, MA: City of Annapolis. Available online at: http://dnr.maryland.gov/CoastSmart/pdfs/Annapolis_RRSLRnSSI.pdf (4) Titus, J. 2011. Rolling easement. Washington, D.C.: Environmental Protection Agency. Available online at: http://water.epa.gov/type/oceb/cre/upload/rollingeasementsprimer.pdf
Week 14 11/24/2021	Climate Intervention	(1) Climate Intervention: Carbon Dioxide Removal and Reliable Sequestration (2) Climate Intervention: Reflecting Sunlight to Cool Earth Available at https://nas-sites.org/americasclimatechoices/other-reports-on-climate-change/2015-2/climate-intervention-reports/
Week 15 12/1/2021	Written Exam	
Week 16 12/8/2021	Final project presentation	
Week 17 12/15/2021	Final project report due at Noon	

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.