

## URP 6445 PLANNING FOR CLIMATE CHANGE

URP 6445

3 CREDITS

FALL 2016

CLASS LOCATION: ARCH 439

CLASS MEETING TIME(S): WEDNESDAY, PERIOD 6-8, 12:50 PM – 3:50 PM

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

*[ARCH 462,  
zpeng@ufl.edu  
352-392-0997 Ext. 429]*

**OFFICE HOURS:** *Office Hours: Thursday 3:00—5:00 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*
- *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.

## 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](mailto: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.

## 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
<i>Assignments and class participation</i>	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 8/24/2016	Course Overview, Climate Change Science and Scenarios	<p>(1) IPCC 2014. Climate Change 2014: Synthesis Report. <a href="https://www.ipcc.ch/report/ar5/syr/">https://www.ipcc.ch/report/ar5/syr/</a></p> <p>(2) <a href="https://www3.epa.gov/climatechange/">https://www3.epa.gov/climatechange/</a></p>
Week 2 8/31/2016	Human Activities and Climate Change	<p>(1) Ewing et al., 2007. Executive Summary. Growing Cooler: The Evidence on Urban Development and Climate Change. Urban Land Institute. Chicago, IL.</p> <p>(2) 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.</p> <p>(3) Vörösmarty, C. J., Green, P., Salisbury, J., &amp; Lammers, R. B. (2000). Global water resources: vulnerability from climate change and population growth. <i>Science</i>, 289(5477), 284-288. <a href="http://science.sciencemag.org/content/sci/289/5477/284.full.pdf">http://science.sciencemag.org/content/sci/289/5477/284.full.pdf</a></p> <p>(4) Grimm, N. B., Faeth, S. H., Golubiewski, N. E., Redman, C. L., Wu, J., Bai, X., &amp; Briggs, J. M. (2008). Global change and the ecology of cities. <i>Science</i>, 319(5864), 756-760.</p>
Week 3 9/7/2016	Climate Change Impacts	<p>(1) Module 2: Climate change Hazards and Risks, available at: <a href="http://ccas.gpem.uq.edu.au">http://ccas.gpem.uq.edu.au</a></p> <p>(2) Maldonado, J., Shearer, C., Bronen, R., Peterson, K., &amp; Lazrus, H. (2013). The impact of climate change on tribal communities in the US: displacement, relocation, and human rights. <i>Climatic Change</i>, 120(3), 601-614. doi:10.1007/s10584-013-0746-z</p> <p>(3) Nicholls, R. J., &amp; Cazenave, A. (2010). Sea-level rise and its impact on coastal zones. <i>Science</i>, 328(5985), 1517-1520.</p> <p>(4) Jacob, et al, 2007. Vulnerability of the New York City metropolitan area to coastal hazards, including sea-level rise:</p>

		Inferences for urban coastal risk management and adaptation policies. In <i>Managing Coastal Vulnerability</i> . Elsevier, pp. 139-156.
Week 4 9/14/2016	Climate Change Impact Analysis for Florida (Tampa and Miami)	<p>(1) Florida Institute for Health Innovation and South Florida Regional Council, 2016. Health and Sea Level Rise: Impacts on South Florida. <a href="http://flhealthinnovation.org/wp-content/uploads/2016/07/Health-and-Sea-Level-Rise-Full-Report-2016.pdf">http://flhealthinnovation.org/wp-content/uploads/2016/07/Health-and-Sea-Level-Rise-Full-Report-2016.pdf</a></p> <p>(2) Yeh, 2011. Resilient Tampa Bay 2011: A Knowledge Exchange with Dutch Experts. Presentation in Resilient Tampa Bay Workshop. Available at <a href="http://sgs.usf.edu/rtb/content/presentations/yeh.pdf">http://sgs.usf.edu/rtb/content/presentations/yeh.pdf</a></p> <p>(3) Southeast Florida Regional Climate Change Compact Inundation Mapping and Vulnerability Assessment Work Group. 2012. Analysis of the Vulnerability of Southeast Florida to Sea Level Rise. <a href="http://www.southeastfloridaclimatecompact.org/wp-content/uploads/2014/09/vulnerability-assessment.pdf">http://www.southeastfloridaclimatecompact.org/wp-content/uploads/2014/09/vulnerability-assessment.pdf</a></p> <p>(4) Florida Oceans and Coastal Council, 2010. Climate Change and Sea-Level Rise in Florida <a href="http://www.floridaoceanscouncil.org/meetings/files/2010/12-13/SLR_1214.pdf">http://www.floridaoceanscouncil.org/meetings/files/2010/12-13/SLR_1214.pdf</a></p>
Week 5 9/21/2016	Climate Change Mitigation Policies and Planning	<p>(1) Crane and Landis, 2010. Introduction to the Special Issue: Planning for Climate Change: Assessing Progress and Challenges. <i>Journal of the American Planning Association</i>. Vol. 76, No. 4.</p> <p>(2) Millard-Ball, 2012. Do City Climate Plans Reduce Emissions? <i>Journal of Urban Economics</i>. Vol. 71. 289-311.</p> <p>(3) 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. <i>Climatic Change</i>. Vol. 122, 331-340.</p> <p>(4) Otto et al., 2015. Embracing the Uncertainty in Climate</p>

		Change Policy. Nature Climate Change. DOI: 10.1038/NCLIMATE2716.
Week 6 9/28/2016	Low Impact Planning and Design	<p>(1) Jabareen, Y. (2013). Planning the resilient city: Concepts and strategies for coping with climate change and environmental risk. <i>Cities</i>, 31, 220-229.</p> <p>(2) Lincoln Institute of Land Policy, 2008. Planning for Climate Change. Available at <a href="http://www.rpa.org/pdf/edgeless-city/2009/Planning_for_Climate_Change.pdf">http://www.rpa.org/pdf/edgeless-city/2009/Planning_for_Climate_Change.pdf</a></p> <p>(3) <i>Cooling the Public Realm: Climate-Resilient Urban Design</i>: <a href="http://www.usgbc.org/Docs/Archive/General/Docs10763.pdf">http://www.usgbc.org/Docs/Archive/General/Docs10763.pdf</a></p> <p>(4) <i>North Carolina Complete Streets Planning and Design Guidelines</i>: <a href="http://www.pedbikeinfo.org/pdf/PlanDesign_SamplePlans_CS_NCDOT2012.pdf">http://www.pedbikeinfo.org/pdf/PlanDesign_SamplePlans_CS_NCDOT2012.pdf</a></p>
Week 7 10/5/2016	Climate Change Adaptation Policies and Planning	<p>(1) Oswald, M. R., &amp; McNeil, S. (2012). <i>Methodology for integrating adaptation to climate change into the transportation planning process</i>. <i>Public Works Management &amp; Policy</i>, 1087724X12469016.</p> <p>(2) Macintosh, A., Foerster, A., &amp; McDonald, J. (2015). <i>Policy design, spatial planning and climate change adaptation: a case study from Australia</i>. <i>Journal of Environmental Planning and Management</i>, 58(8), 1432-1453.</p> <p>(3) Romsdahl, R. J., Wood, R. S., &amp; Hultquist, A. (2015). <i>Planning for climate change adaptation in natural resources management: Challenges to policy-making in the US great plains</i>. <i>Journal of Environmental Policy &amp; Planning</i>, 17(1), 25-43.</p> <p>(4) Shi, L., Chu, E., &amp; Debats, J. (2015). <i>Explaining progress in climate adaptation planning across 156 US municipalities</i>. <i>Journal of the American Planning Association</i>, 81(3), 191-202.</p> <p>(5) Birch, E. L. (2014). <i>A Review of "Climate Change 2014: Impacts, Adaptation, and Vulnerability" and "Climate Change 2014: Mitigation of Climate Change"</i>. <i>Journal Of The American Planning Association</i>, 80(2), 184-185.   <a href="https://doi.org/10.1080/01944363.2014.954464">doi:10.1080/01944363.2014.954464</a></p>



<p>Week 8 10/12/2016</p>	<p>Adaptive Planning for the Natural Environment</p>	<p>(1) Millar, C. I., Stephenson, N. L., &amp; Stephens, S. L. (2007). Climate change and forests of the future: managing in the face of uncertainty. <i>Ecological applications</i>, 17(8), 2145-2151.</p> <p>(2) Kirwan, M. L., Guntenspergen, G. R., D'Alpaos, A., Morris, J. T., Mudd, S. M., &amp; Temmerman, S. (2010). Limits on the adaptability of coastal marshes to rising sea level. <i>Geophysical Research Letters</i>, 37(23).</p> <p>(3) Craft, C., Clough, J., Ehman, J., Joye, S., Park, R., Pennings, S., ... &amp; Machmuller, M. (2009). Forecasting the effects of accelerated sea-level rise on tidal marsh ecosystem services. <i>Frontiers in Ecology and the Environment</i>, 7(2), 73-78.</p> <p>(4) Fuentes, M. M., Pike, D. A., Dimatteo, A., &amp; Wallace, B. P. (2013). Resilience of marine turtle regional management units to climate change. <i>Global change biology</i>, 19(5), 1399-1406.</p>
<p>Week 9 10/19/2016</p>	<p>Adaptive Planning for the Built Environment</p>	<p>(1) Stamos, I., Mitsakis, E., &amp; Grau, J. (2015). Roadmaps for adaptation measures of transportation to climate change. <i>Transportation Research Record</i>, 2532(2532), 1-12. doi:10.3141/2532-01</p> <p>(2) Strauch, R. L., Raymond, C. L., Rochefort, R. M., Hamlet, A. F., &amp; Lauver, C. (2015). Adapting transportation to climate change on federal lands in washington state, U.S.A. <i>Climatic Change</i>, 130(2), 185-199. doi:10.1007/s10584-015-1357-7</p> <p>(3) Paterson, J., Berry, P., Ebi, K., &amp; Varangu, L. (2014). Health care facilities resilient to climate change impacts. <i>International Journal of Environmental Research and Public Health</i>, 11(12), 13097-13116. doi:10.3390/ijerph111213097</p> <p>(4) Stokke, K. (2014). Adaptation to sea level rise in spatial planning - experiences from coastal towns in norway. <i>Ocean &amp; Coastal Management</i>, 94, 66-73. doi:10.1016/j.ocecoaman.2013.11.010</p>
<p>Week 10</p>		<p>(1) Grannis, J. 2011. Adaptation tool kit: sea level rise and coastal land use. Washington, D.C.: Georgetown Climate</p>

<p>10/26/2016</p>		<p>Center. Available online at:  <a href="http://www.georgetownclimate.org/sites/default/files/Adaptation_Tool_Kit_SLR.pdf">http://www.georgetownclimate.org/sites/default/files/Adaptation_Tool_Kit_SLR.pdf</a>.</p> <p>(2) Urban Engineers, Inc. 2010. Climate change: impacts and adaptation strategies Philadelphia International Airport. Philadelphia, PA: Urban Engineers, Inc. Available at:  <a href="http://www.urbanengineers.com/pdffiles/Climate%20Change%20Impacts%20and%20Adaptation%20Strategies%20at%20PHL%20Decemb.pdf">http://www.urbanengineers.com/pdffiles/Climate%20Change%20Impacts%20and%20Adaptation%20Strategies%20at%20PHL%20Decemb.pdf</a>.</p> <p>(3) Adger, N., Arnell, N., and Tompkins, E. 2005. Successful adaptation to climate change across scales. <i>Global Environmental Change</i> 15(2), 77-86.</p> <p>(4) Deyle, R., Bailey, K., and Matheny, A. 2007. Adaptive response planning to sea level rise in Florida and implication for comprehensive and public-facilities planning. Tallahassee, FL: Florida State University. Available online at:  <a href="http://www.coss.fsu.edu/durp/sites/coss.fsu.edu.durp/files/WP_S_08_02_Deyle.pdf">http://www.coss.fsu.edu/durp/sites/coss.fsu.edu.durp/files/WP_S_08_02_Deyle.pdf</a></p>
<p>Week 11 11/2/2016</p>	<p>Developing Adaptation Planning for Florida</p>	<p>(1) Southeast Florida Regional Climate Compact. 2012. A Region Responds to a Changing Climate.  <a href="http://www.southeastfloridaclimatecompact.org/wp-content/uploads/2014/09/regional-climate-action-plan-final-ada-compliant.pdf">http://www.southeastfloridaclimatecompact.org/wp-content/uploads/2014/09/regional-climate-action-plan-final-ada-compliant.pdf</a></p> <p>(2) South Florida Regional Planning Council. 2013. Adaptation Action Areas: Policy Options for Adaptive Planning For Rising Sea Levels.  <a href="http://www.southeastfloridaclimatecompact.org/wp-content/uploads/2014/09/final-report-aaa.pdf">http://www.southeastfloridaclimatecompact.org/wp-content/uploads/2014/09/final-report-aaa.pdf</a></p> <p>(3) Tampa Bay Estuary Program. 2012. Tampa Bay Estuary Program: 2012-2013 annual workplan budget. Petersburg, FL: Tampa Bay Estuary Program. Available online at:  <a href="http://www.mymanatee.org/published/July%202024,%202012%20Regular%20Meeting%20on%20Tuesday,%20July%202024,%202012/FC165632-A773-4948-A028-8DA158B4A260.pdf">http://www.mymanatee.org/published/July%202024,%202012%20Regular%20Meeting%20on%20Tuesday,%20July%202024,%202012/FC165632-A773-4948-A028-8DA158B4A260.pdf</a>.</p> <p>(4) Institute for Sustainable Communities. 2014. Integrating Climate Change &amp; Water Supply</p>

		<p>Planning In Southeast Florida.</p> <p><a href="http://www.southeastfloridaclimatecompact.org/wp-content/uploads/2014/09/rcap-igd-water-supply-final-9-9.pdf">http://www.southeastfloridaclimatecompact.org/wp-content/uploads/2014/09/rcap-igd-water-supply-final-9-9.pdf</a></p>
<p>Week 12 11/9/2016</p>	<p>Legal Issues of Adaptation Planning</p>	<p>(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.</p> <p>(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.</p> <p>(3) City of Annapolis. 2011. Regulatory responses to sea level rise and storm surge inundation. Annapolis, MA: City of Annapolis. Available online at: <a href="http://dnr.maryland.gov/CoastSmart/pdfs/Annapolis_RRSLRnS_Sl.pdf">http://dnr.maryland.gov/CoastSmart/pdfs/Annapolis_RRSLRnS_Sl.pdf</a>.</p> <p>(4) Titus, J. 2011. Rolling easement. Washington, D.C.: Environmental Protection Agency. Available online at: <a href="http://water.epa.gov/type/oceb/cre/upload/rollingeasementsprimer.pdf">http://water.epa.gov/type/oceb/cre/upload/rollingeasementsprimer.pdf</a></p>
<p>Week 13 11/16/2016</p>	<p>Climate Intervention</p>	<p>(1) Climate Intervention: Carbon Dioxide Removal and Reliable Sequestration</p> <p>(2) Climate Intervention: Reflecting Sunlight to Cool Earth</p> <p>Available at <a href="https://nas-sites.org/americasclimatechoices/other-reports-on-climate-change/2015-2/climate-intervention-reports/">https://nas-sites.org/americasclimatechoices/other-reports-on-climate-change/2015-2/climate-intervention-reports/</a></p>
<p>Week 14 11/23/2016</p>	<p>Exam</p>	
<p>Week 15 11/30/2016</p>	<p>Final project presentation</p>	
<p>Week 16 12/7/2016</p>	<p>Working on your project</p>	

Week 17 12/14/2016	Final project report Due
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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.