# IDS2935: People and Places in a Changing Climate

Quest 2

## I. General Information

### Class Meetings

- Fall 2024
- Day Period: T (7), Th (7&8)
- Location: TBC

### Instructor


- Esther Mullens
- Turlington Hall 3138
- Office Hours: TBC
- Email: emullens@ufl.edu


### Course Description

How is a changing climate changing the way we interact with our landscapes, and what does the next century hold? This Quest 2 course will explore the impacts of climate change over the United States, starting with an overview of climate change science and the tools climate scientists use to measure and monitor climate change. We then move between four specific sub-regions of the country, identifying the cultural and historical contexts of these regions, how climate has varied in the ancient and recent past, how it may change in the future, and how these aspects both come together to inform how each region is responding to their changing environment.

The purpose of this course is to foster climate change literacy so that students are prepared to face arguably the most pressing challenge of the 21$^{st}$ century. This is accomplished through course content, activities, and assignments, that help students appreciate the scientific basis for climate change, and how climate change is impacting the places they know and care about. We explore the ways climate change is creating challenges, but also opportunities in terms of the ways we live and interact with our environment, and what is needed for effective adaptation to the hazards it poses. Students will be challenged to critically evaluate their own perceptions of climate change, as well as to appreciate the complexities in attempting to solve real world problems under a variety of plausible projections of future climate. This course spans both physical and social sciences, and therefore may appeal to students in a broad range of disciplines. Student evaluation will include some basic data analysis using online tools, a focus on competent oral and written communication, and teamwork.

## Quest and General Education Credit

- Quest 2
- **Physical Sciences (P)**

Physical science courses provide instruction in the basic concepts, theories, and terms of the scientific method in the context of the physical sciences. Courses focus on major scientific developments and their impacts on society, science and the environment, and the relevant processes that govern physical systems. Students will formulate empirically testable hypotheses derived from the study of physical processes, apply logical reasoning skills through scientific criticism and argument, and apply techniques of discovery and critical thinking to evaluate outcomes of experiments.

*This course accomplishes the Quest and General Education objectives of the subject areas listed above. A minimum grade of C is required for Quest and General Education credit. Courses intended to satisfy Quest and General Education requirements cannot be taken S-U.*

## Required Readings and Works

**Required Readings:**
Owen, D. 2017. *Where the River Goes – Life and Death along the Colorado River*. ISBN (13): 978-1594633775

Pilkey O, and Pilkey K. 2019. *Sea Level Rise – A slow Tsunami on America's shores.* Duke University Press.

*USGCRP, 2023: *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume III* U.S. Global Change Research Program, Washington, DC, USA, https://nca2023.globalchange.gov/

*Selected Chapters.

Additional readings may be added and posted on Canvas.

Materials and Supplies Fees: We will be using I-Clicker student for laptop or smartphone. The typical cost for a subscription for the duration of this course is around $30.

# II. Graded Work

## Description of Graded Work

| | Description | Weight for Final Grade |
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| Attendance<br>*(Two unapproved absences waived)* | Daily attendance will be taken at the start of every lecture (using I-Clicker); grade based on percentage of lectures attended. | 10% |
| In-Class Assignments<br>*(Two activities waived or dropped for lowest grade)* | Course activities may include group discussions, interactive polls or quizzes, 'pair and share' comprehension and feedback between peers. These activities will be graded based on correct/incorrect responses. We will also conduct scenario-based roleplay and data visualization exercise, for which students will obtain full credit when completing the task with good effort. | 15% |
| Short-answer summaries and reflections<br>*(no drops)* | These graded assessments will enforce course content by asking students to summarize and critically evaluate key material in lecture and/or in the required readings. One or two additional questions ask students to reflect on what they are learning, their viewpoints on the arguments presented in the course and readings, and their own perspectives on the material and its implications for their lives and careers. Assignment released at the end of each unit. | 25% |
| Quizzes<br>*(lowest 2 grades dropped)* | Quizzes are released each week (with one week to complete) that assess the content and readings of that prior week. Each quiz will be composed of 12-20 questions. | 20% |
| Semester Project (written)<br>*(no drops)* | Students will select one of the four US subdomains explored in this course and prepare a climate assessment for a portion of that area. They will outline past, present, and future climate change, describe the culture, economy and populations of their region, and their vulnerabilities to climate impacts. They will explore ways in which those communities are adapting to, or mitigating climate change impacts, and outline the most pressing challenges and opportunities in decision- | 20% |

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| | making and risk reduction for the future. Expected length of 6-9 pages (double spaced), excluding figures and bibliography.<br><br>*Assessment method:* A rubric will be supplied early in the semester. The rubric includes four key elements that students should demonstrate competency in: (1) *Narrative* (clear opening and closing sections, emphasis on key points); (2) *Organization* (flow of content, essay structure and organization of associated images, graphics, tables etc, including appropriate referencing where applicable); (3) *Grammar* (use of appropriate grammatical structures, spelling etc.); (4) *Content* (information presented is accurate, well researched, evidence of multiple citations from reputable sources, reader is left with new insights into the subject matter). | |
| Semester project (oral) *(no drops)* | Students will create and record an oral presentation that summarizes the key points of their climate summaries. These presentations will be shared amongst the class and each member of the class is required to offer constructive feedback on a select number of their peer's presentations, as well as Q&A during class time.<br><br>*Assessment method:* A rubric will be supplied early in the semester, and will contain the following elements:<br>(1) *Organization* – structure and flow of the presented work, degree to which the presentation can be followed well by the audience. Effective and creative use of visuals, and design aesthetic.<br>(2) *Content* – as above, whether the work shows depth of research and understanding, is accurate and well referenced.<br>(3) *Communication* – Student's oral component, based on use of vocal variety, pacing, keeping to time, clarity. | 10% |

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| | (4) *Peer-review and participation* – student's peer feedback should contain constructive and informative information, demonstrating that the reviewer actively viewed their presentation. Likewise, students will be required to ask at least 4 questions during Q&A (one question per peer that is reviewed, their choice, since it is likely they will review 5-10 presentations depending on class size). Questions should be open-ended (i.e., not a yes/no answer response). | |

### Grading Scale

For information on how UF assigns grade points, visit: https://catalog.ufl.edu/UGRD/academicregulations/grades-grading-policies/. Grades will rounded to the nearest whole number:

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| A | 93 – 100% | | C | 73 – 76% |
| A- | 90 – 92% | | C- | 70 – 72% |
| B+ | 87 – 89% | | D+ | 67 – 69% |
| B | 83 – 86% | | D | 63 – 66% |
| B- | 80 – 82% | | D- | 60 – 62% |
| C+ | 77 – 79% | | E | <60 |

## III. Annotated Weekly Schedule

| Week | Topics, Homework, and Assignments |
|---|---|
| **UNIT 1** | **Climate Science Basis (wk1-3)** |
| Week 1 (Aug 19) | • **Topic:** Course overview and expectations |
| Week 2 (Aug 26) | • **Topic:** Earth's climate system<br>• **1.1.** Earth's energy balance<br>• **1.2** Carbon and Water cycles |

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| | • **1.3** Global circulations<br>• **Readings:** National Climate Assessment Chapter 3: *Earth System Processes (46 pp)*<br>**Quiz 2:** *1.1-1.3* |
| Week 3<br>(Sep 2) | • **Topic:** Anthropogenic climate change, climate modeling, and climate projections<br>• **1.4** Climates of the Ancient Past<br>• **1.5** How is our climate changing now?<br>• **1.6** How can we discern our climate future (climate modeling and projections primer)<br>• **Readings:** National Climate Assessment Chapter 2: *Climate Trends (40 pp)*<br>**Quiz 3:** *1.4-1.6*<br><br>**Written assessment 1:** *Based on weeks 1-3 readings* |
| **UNIT 2** | **Region 1: U.S West – Water Rights and Megadrought (wk 4-6)** |
| Week 4<br>(Sep 9) | • **Topic:** Paleoclimate and human history of the Colorado River basin, current conditions, and future projections<br>• **2.1** Culture, environment, society of the west<br>• **2.2** Megadrought and Pluvial<br>• **2.3** Climate change in the west<br>• **Readings:** National Climate Assessment Chapters 27 and 28: *Northwest and Southwest regional chapters (75pp)*<br>**Quiz 4:** *2.1-2.2* |
| Week 5<br>(Sep 16) | • **Topic:** 'Law' of the River – water rights, water use, and water management. Intersections with climate change.<br>• **2.4** Case study: The Colorado River Basin + activities<br>• **Readings:** Owen, 2017 – Chapter 1&2 (25pp) (optional – chapter 9), 12, and 18 (40pp), Law of the River (1922, 3pp).<br>**Quiz 5:** *2.3-2.4* |
| Week 6<br>(Sep 23) | • **Topic:** Future of the Region – adaptation, challenges, and opportunities<br>• **2.5** Fires and Flood<br>• **2.6** Adaptation and Mitigation options<br>• **Readings:** National Climate Assessment Focus chapters F1 and F2 (20 pp)<br>**Quiz 6:** *2.5-2.6*<br><br>**Written assessment 2:** *Based on weeks 4-6 readings* |
| **UNIT 3** | **Region 2: U.S Great Plains – 'Feast and Famine' (wk 7-9)** |

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| Week 7<br>(Sep 30) | • **Topic:** Cultural and Climatic history of the Plains, major economies. Current conditions and future projections.<br>• **3.1** Cultures and geography of the Plains<br>• **3.2** A land of disasters<br>• **Readings:** National Climate Assessment Chapters 16 (27pp) AND 25 OR 26 (40 pp) (read one)<br>**Quiz 7:** *3.1-3.2* |
| Week 8<br>(Oct 7) | • **Topic:** What we can learn from the dustbowl, and more recent drought and pluvial events<br>• **3.3** Case study 1: The dustbowl<br>• **Video:** The Dust Bowl": Darkness in the Great Depression (20 min).<br>• **3.4** Case study 2: Floods<br>• **Video:** "Flooded with you" (August 2016 Baton Rouge Floods) (8 min).<br>• **Reading:** Economic Impacts of the Baton Rouge Flood (23 pp).<br>**Quiz 8:** *3.3-3.4* |
| Week 9<br>(Oct 14) | • **Topic:** Adaptation and management of climate change in the midst of climate skepticism.<br>• **3.5** Climate Future of the Great Plains<br>• **3.6** Climate change communication and misinformation<br>• **Video: '**Years of Living Dangerously' Episode 1: (1-hr)<br>**Quiz 9:** *3.5-3.6*<br>**Written Assignment** *Unit 3 videos/readings* |
| **UNIT 4** | **Region 3: U.S East – Flooding, storms, and rising seas** |
| Week 10<br>(Oct 21) | • **Topic:** Past climates, economic and societal factors, current conditions, and future projections<br>• **4.1** Overview of the East Coast – populations, built environment, geography<br>• **4.2** Why focus on water? Climatic history, and future trends<br>• **4.3** Tropical Cyclones and Rainstorms<br>• **Readings:** National Climate Assessment Chapters 21 and 22 (chapter 23 recommended but not required) (75 pp)<br>**Quiz 10:** *4.1-4.3* |
| Week 11<br>(Oct 28) | • **Topic:** To retreat or not to retreat? Managing for sea level change<br>• **4.4** Causes and impacts of sea level change.<br>• **4.5** Managing rising seas (focus on Florida)<br>• **Readings:** Pilkey O, and Pilkey K. 2019 (Prologue - optional), Chapters 1,3,5-6 (50 pp)<br>**Quiz 11:** *4.4-4.5*<br><br>**Final Project and Presentation instructions released** |
| Week 12 | • **Topic:** Adapting to compound flooding, inland flooding, flood policy. |

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| (Nov 4) | • **4.6** Case studies of compound floods – Hurricane Sandy (2012)<br>• **4.7** National flood insurance program past and future<br>• **Readings:** Pilkey O, and Pilkey K. 2019, Chapters 9-10 (40 pp), New York City report on Hurricane Sandy (8pp), Climate Central: Four Lessons Learned from Hurricane Sandy (5 min read).<br>**Quiz 12:** *4.5-4.6*<br><br>**Written Assignment:** *Unit 4 readings* |
| **UNIT 5** | **Region 4: Alaska – the Thaw** |
| Week 13 (Nov 11) | • **Topic:** A culture that relies on the freeze – history and development of Alaska; impacts of a changing climate<br>• **5.1** A brief history of Alaska<br>• **5.2** Climate Change in the Arctic<br>• **Readings:** National Climate Assessment, Chapter 29 (45pp), Pilkey O, and Pilkey K. 2019 Chapter 2 (13 pp)<br>**Quiz 13:** *5.1-5.2* |
| Week 14 (Nov 18) | • **Topic:** A thawing land – melting permafrost, tipping points, biological hazards, and efforts to adapt.<br>• **5.3** What are 'tipping points?'<br>• **5.4** Adaptation case studies<br>• **Readings:**<br>USGS: "A Disappearing Act" (10 min read)<br>European Space Agency: Tipping Points (interactive site ~20-30 min read, focus on tipping points over Euro-North American region).<br>**Quiz 14:** *5.3-5.4*<br><br>**Written Assignment:** *Based on readings in Unit 5.* |

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| Week 15 (Dec 2) | • **Topic:** Recorded presentations due by Dec 1. Peer review and discussions and Q&A in class time on Dec 5. Course summary and reflection (Dec 3) |
| Week 16 (Dec 9) | • **Finals week – no course contact time**<br>• Written component of project (Climate Assessments) due Sunday Dec 8 @11.59PM. |

# IV. Student Learning Outcomes (SLOs)

At the end of this course, students will be expected to have achieved the Quest and General Education learning outcomes as follows:

**Content***: Students demonstrate competence in the terminology, concepts, theories, and methodologies used within the discipline(s)*. Students will evaluate and describe how we know Earth's climate is changing, and the natural and anthropogenic contributions to historical and present changes, including the relevant theories, terminology, and tools associated with climate science. Students will also enhance their understanding of the geographic variability of climate change and climate impacts, with a focus on socio-economic systems, policy, and cultural identity. Students will also develop competency in interpreting climate model projections, using simple climate model tools to test hypotheses, interpret graphical data, use observations to examine trends (*Quest 2 Physical Sciences*).

**Critical Thinking**: *Students carefully and logically analyze information from multiple perspectives and develop reasoned solutions to problems within the discipline(s).* Students will work on multiple individual and group assignments and/or discussions that challenge them to write and communicate clearly using various styles. For example, In-class peer discussions, role-playing exercises, data visualization, polling/quizzes, and self-reflection assignments help students to develop clear and accurate lines of reasoning and evaluate the credibility of their arguments. Project work involves students developing their own climate assessment for a region of their choice, evaluating a multitude of factors that contribute to that region's vulnerability, resilience, and adaptive capacity. These exercises teach them to balance multiple completing elements of high priority, and helping them walk in the shoes of leaders, managers and decision-makers that are tasked with making difficult choices. Clear rubrics are provided in Canvas for each form of written, oral, and group assignment (Quest 2, Physical Sciences).

**Communication**: *Students communicate knowledge, ideas, and reasoning clearly and effectively in written and oral forms appropriate to the discipline(s).* Students will have to effectively communicate their ideas through regular discussions/activities in class, and through their written and oral communication in short answer assessments and the final project. They will also learn to conduct constructive self and peer-evaluation through the course of fulfilling these exercises (Quest 2, Physical Sciences).

**Connection**: *Students connect course content with meaningful critical reflection on their intellectual, personal, and professional development at UF and beyond.* Climate change is one of the most major challenges of the next century and beyond. It impacts almost every facet of our existence, and it is forcing us to re-evaluate our societal, technological, energy, economic, and moral positions. This course takes a wide interdisciplinary view on the subject, with specific emphasis on the United States, where it is assumed that most students will continue live and work. By understanding the multifaceted nature of the climate challenge, students will be equipped with knowledge and tools to evaluate how to tackle this problem in their own lives and careers. This will be brought into particular focus with the project work, that allows students to

focus on areas of particular interest or concern to them. The instructor will work closely with students to help them craft their project and offer feedback on a regular basis (Quest 2).

# V. Quest Learning Experiences

## 1. Details of Experiential Learning Component

Experiential learning activities will be incorporated in the following ways:

- **In class activities:** Students will engage in structured team activities for one 50-minute period bi-weekly. Activities will include data visualization labs using online tools to select, plot, and visualize climate model projections and/or climate impacts (e.g., sea level rise, social vulnerability statistics, ecosystem shifts, among others). Many of these options will be drawn from the US Climate Resilience Toolkit (https://toolkit.climate.gov/). Other activities will focus on roleplay, where students will place themselves in the role of a non-academic professional who is attempting to reduce climate risk in their sector and must consider multiple climatic and non-climatic factors in their decision-making processes. Specific examples include a water management and investment challenge for the US southwest using simplified climate projection data; a 'Game of Floods' or adaptation challenge for a hypothetical coastal community; and making investment decisions under uncertainty or "Decisions for the Decade". Further possibilities are available at: https://www.climatecentre.org/priority_areas/innovation/climate-games/. The stated scenario activities above have been developed or adapted by researchers affiliated with national Climate Adaptation Organizations, such as the South-Central Climate Adaptation Science Center and are already available to the instructor.
- **Final Project (Climate Assessment):** Students will select a region or city to focus on that is meaningful to them. They research, synthesize, and create a climate assessment that weaves multiple components such as physical climate science, economics, demographics, vulnerability and hazards, policy, and sectoral-based considerations (e.g., transportation, energy, health etc.). Students will be given the opportunity to contact or interview professionals in those communities. Students will communicate their assessment through written and visual mediums, as well as orally, and in a peer question and answer session. This project thus constitutes substantial original work that the student can discuss in future career applications.

## 2. Details of Self-Reflection Component

Self-reflection exercises will be incorporated in the following ways:

- **In-class:** At the conclusion of each in-class activity, students will be asked to provide a short written summary of what they learned through the activity, and to reflect on the broader implications of this knowledge in terms of the discipline(s) but also their own career trajectory.
- **Short-answer homework:** Built into this set of assignments will be one or two questions that require the students to self-reflect on how the content impacts them, what they perceive of its implications at large, what they identified as fascinating or what they were critical of.

These assignments will focus on both the lecture content, but also on the readings which are designed to spark curiosity and provide more depth and alternate perspectives beyond what is covered in class directly.

- **Project:** Students will be able to receive and parse through instructor feedback on their climate assessments ahead of the final deadline, and to evaluate for themselves how or whether to incorporate this feedback. Peer-review of their recorded oral presentations, as well as class Q&A will help the students to evaluate whether they effectively understood and communicated the key messages to their audience.

# VI. Required Policies

## Attendance Policy

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

## Students Requiring Accommodation

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting https://disability.ufl.edu/students/get-started/. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

## UF Evaluations Process

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://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

## University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the 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.” The Honor Code (https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/ ) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel.

If you have any questions or concerns, please consult with the instructor or Tas (if applicable) in this class.

## AI Tools Policy

AI tools can be revolutionary in terms of the help they provide us in addressing certain challenges, they should not be used as a way to avoid doing the dirty work of learning ourselves. For our course I expect the class to adhere to the following policies. Reflecting the student honor code, you should do your work with integrity, honesty, and diligence.

**Use in essay-writing, short-answers and synthesis: You may NOT directly reproduce any AI generated text in your written work.** You may use the tool to synthesize knowledge for research and information gathering purposes, but any information generated MUST be written in your own words, and you must be sure to reference all citations used as part of this work, whether or not they come from the AI, or from your own independent research. **If you use AI for information/content gathering, then it must be cited as a resource.** I will be using resources to check content against AI generators, and so by not disclosing this use and/or directly lifting the AI-generated stuff, you will be in danger of a zero grade.

## Counseling and Wellness Center

Contact information for the Counseling and Wellness Center:
http://www.counseling.ufl.edu/cwc/Default.aspx , 392-1575; and the University Police Department:
392-1111 or 911 for emergencies.

## The Writing Studio

The writing studio is committed to helping University of Florida students meet their academic and professional goals by becoming better writers. Visit the writing studio online at http://writing.ufl.edu/writing-studio/ or in 2215 Turlington Hall for one-on-one consultations and workshops.

## In-Class Recordings

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving

solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.
Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third-party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.