GEO 4033: Climate Change and Health

Dr. David Keellings **MWF 9:35-10:25am** **3012 Turlington Hall** **Fall 2025**

Office Hours
W/F 10:30-11:30am, other times **BY APPOINTMENT ONLY**
Office: 3117 Turlington Hall
Email: djkeellings@ufl.edu
Note: For best results – utilize office hours. If you are having trouble with the course, come and see me sooner rather than later so that I can help you.

Course Description
This course is an introduction to the effect of global climate change on health. The course will be taught from a geographical perspective and will introduce students to the physical science of climate change and the impact it has on health through discussion of extreme weather events, altered ecological systems, and threats to human security and welfare. Discussion will build on the core concepts of climate change science to provide students with a solid foundation to further examine a variety of topics from acute impacts such as heat waves and other weather extremes to chronic conditions such as shifting disease vector habitats, degraded air quality, and food security. Direct correlations between health impacts and climate change will be emphasized throughout as will discussion of mitigation and adaptation strategies. *3 Credit Hours*

Prerequisites
GEO 2200 or GEO 2242 or MET 1010 or permission of instructor.

Student Learning Objectives
After completing the course, students should have developed a keen understanding of the science of climate change and the pathways by which it impacts human health. Specific learning objectives include:

- Explain the science behind climate change and climate variability
- Describe links between climate change and health through examination of correlations between climate and health
- Identify geographic patterns of climate-health relationships at various spatial scales
- Apply scholarly and research methods to describe climate-health relationships
- Apply common scientific skills such as observation, data gathering, analysis, interpretation, and communication to describe climate-health relationships
- Apply critical thinking skills as they relate to climate science and public health including the capacity to make informed decisions about human activities, climate change, and health

NOTE: This course is co-listed with GEO 6346 which is a graduate course. While the two will meet together and complete similar exams and assignments, undergraduates and graduates will be evaluated on a different basis. Graduate students are required to contribute more frequently and with greater depth in reading discussions, complete a rigorous research paper and present the research paper to the class, and graduate students will not be able to consult their notes during the exams. In lieu of the graduate student research paper and presentation, undergraduate students are required to complete weekly homework assignments in the form of discussion responses.

Course Resources

Required Text:

- Lemery, J., Knowlton, K., Sorensen, C. eds. 2021. Global Climate Change and Human Health: From Science to Practice, 2nd Edition. John Wiley & Sons.ISBN: 978-1-119-66795-7

Furthermore, throughout the semester readings will be distributed and discussed. All of these readings will be free, online books or articles and will be posted on the class website.

Grades and Grading Scale

Exams (2 @ 20%): 40%
Homework Assignments: 30% (10 HWs @ 3% each)
Group Presentation and Discussion: 20%
Class Participation: 10%

- **Exams:** Exams will be used to evaluate your proficiency in the course material. Two exams will be given that cover only the material since the previous exam.

- **Homework Assignments:** Assignments are to serve as preparation for the topical material covered weekly. Assignments will consist of several questions related to the weekly assigned readings and should be completed on the course website discussion board along with the reading prior to that week's topic being discussed in lecture. On the week you are presenting your group presentation you are exempt from the homework assignment.

- **Group Presentation:** Each week a small group of students will present a summary of an article relating to the topic covered in lecture. The presentation should consist of a concise summary of the article and lead into discussion questions for class participation. A sign-up sheet will be posted on the class website for you to pick a topic/week of presentation. Group sizes will be limited and topic/date is chosen first-come-first-served. Each group member will be expected to contribute to the presentation and discussion points. Each group member will be evaluated based on presentation/discussion performance and within group peer-evaluation. See reading sign-up sheet and presentation grade rubric.

- **Class Participation:** Students are expected to regularly attend class and actively participate in group-led discussions. Students should be prepared to contribute to discussion having read the assigned readings.

>=91.0% = A	90.0-90.9%= A-	87.0-89.9%= B+	81.0-86.9%= B
80.0-80.9%= B-	77.0-79.9%= C+	71.0-76.9%= C	70.0-70.9%= C-
67.0-69.9% = D+	64.0-66.9%= D	60.0-63.9%= D-	<60.0% = E

A grade threshold must be crossed in order to receive the letter grade indicated (no rounding). It is your responsibility to know your current grade. Grades will be posted to the course website. Information on current UF grading policies for assigning grade points may be found at https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx.

Make-Up Exams and Assignments

Students must notify the instructor as soon as possible in case of absence and provide documentation as to the reason for the absence. If deemed an excused absence, the student will be permitted a reasonable amount of time to make up the missed work. Requirements for 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

Late Work
Late assignments will have 10 percent deducted from the possible total score for each day they are late (E.g. if you earn an 80% on the work but are one day late you receive a 70%).

Canvas Course Website Information
This syllabus, announcements concerning exams, some lecture content, grades, and other course information will be posted on Canvas course management system. Access this page at https://elearning.ufl.edu/. If you miss a class, it is your responsibility to learn the material covered during your absence. Come see me if you have any questions. Students must activate their UF GatorLink account in order to use Canvas. If you need help learning how to perform various tasks related to this course or other courses that utilize Canvas, please consult the above webpage. You may also contact the UF Computing Help Desk at (352) 392- HELP(4357) or helpdesk@ufl.edu

Attendance and Proper Conduct
Failure to attend during student presentations will result in a 10-percentage point deduction from your final presentation score per each day's absence.

This course complies with all UF academic policies. For information on those polices and for resources for students, please see this link. *(The direct link is https://syllabus.ufl.edu/syllabus-policy/uf-syllabus-policy-links/.)*

Course Schedule (Subject to Change)

Week	Topics	Class Activity	Readings (to be completed prior to date shown)
1 Aug. 22	Introduction & Climate Science		
		Lecture	
2 Aug. 25	Climate Science	Lecture	Chapter 1 Textbook
		Discussion of Chapter	
		Group Presentation	IPCC AR6 SPM 2023
3 Sep. 1	Extreme Weather/Disaster Risk Reduction	**NO CLASS**	**NO CLASS**
		Discussion of Chapter	Chapter 2 Textbook
		Group Presentation	IPCC SREX SPM 2011
4 Sep. 8	Climate/Health Risk Factors	Lecture	Chapter 3 Textbook
		Discussion of Chapter	
		Group Presentation	Johnson et al 2012
5 Sep. 15	Hydrologic Cycle/Waterborne Disease	Lecture	Chapter 4 Textbook
		Discussion of Chapter	
		Group Presentation	Semenza et al 2012
6 Sep. 22	Air Masses/Air Quality	Lecture	Chapter 5 Textbook
		Discussion of Chapter	
		Group Presentation	Kinney 2018
7 Sep. 29	Vector-borne/Zoonotic Diseases	Lecture	Chapter 8 Textbook
		Discussion of Chapter	
		Group Presentation	Butterworth et al 2017
8 Oct. 6	Carbon Dioxide/Plant Biology	Lecture	Chapter 7 Textbook (NO HW)
		Review	
		Exam 1	
9 Oct. 13	Food Security/Nutrition	Lecture	Chapter 9 Textbook
		Discussion of Chapter	

		Group Presentation	Porter et al 2014
10 Oct. 20	Mental Health	Lecture	Chapter 10 Textbook
		Discussion of Chapter	
		Group Presentation	Galea et al 2007
11 Oct. 27	Future Climate/Health Impact Projections	Lecture	Chapter 13 Textbook (Ch15 if new edition)
		Discussion of Chapter	
		Group Presentation	Huang et al 2011
12 Nov. 3	Mitigation & Cobenefits	Lecture	Chapter 18 Textbook (Ch19 if new edition)
		Discussion of Chapter	
		Group Presentation	Jacobson et al 2013
13 Nov. 10	NO CLASS	**NO CLASS**	**NO READINGS**
14 Nov. 17	Communication	Lecture	Chapter 16 Textbook (Ch17 if new edition)
		Discussion of Chapter	
		Grad Presentations	
15 Nov. 24	NO CLASS	**NO CLASS**	**NO READINGS**
16 Dec. 1		Review	
		Exam 2	