

## SYLLABUS: IUF2100 – CLIMATE CHANGE SCIENCE AND SOLUTIONS

Fall 2015, Section XX, Meeting: MAEB 229, Thursday 7<sup>th</sup>-8<sup>th</sup> period (1:55-3:50 pm)

### INSTRUCTORS

Lead Instructor: Dr Andrew Zimmerman, Department of Geological Sciences

Office: 364 Williamson Hall Ph# 392-0070 email: [azimmer@ufl.edu](mailto:azimmer@ufl.edu) Office meeting: by appointment

Section Instructor (TA): Eric Stubbs, Department of Agricultural Education and Communication Office: ROL411

Office Hour: R 12:30 – 1:30 pm (or by appt.) email: [ericeric@ufl.edu](mailto:ericeric@ufl.edu)

### COURSE DESCRIPTION

This course invites students to deepen their understanding of the practice of science by examining the complex issue of climate change. Working collaboratively and using the scientific method, we will explore the multi-disciplinary evidence behind climate change and its effects and develop potential novel adaptation and mitigation solutions and to communicate this work effectively.

**Prerequisites:** none

**Credits:** 3

**Course Fee:** none

**Gen. Ed. Fulfillment:** P

#### Course Objectives

This physical science general education course will cover concepts of climate change and our modern society. It is the aim of this course that by the end, students will be able to:

- Understand the fundamental science and uncertainties regarding 'climate change', the role of humans in causing it, and its possible effects on a variety of natural and human systems.
- Apply the process of critical thinking and scientific inquiry in discovering, understanding, and addressing the challenges of climate change.
- Develop hypothesis-driven solutions to address climate change through critical evaluation and teamwork.
- Effectively communicate multi-disciplinary scientific challenges and strategies for addressing them.

#### Course Structure

The course will require both on-line and in-class participation. Each week, students will explore online content (about 2 hours total) that will include:

- 1) Completion of a 'Spark' Discussion (**by Sunday 11:59 pm**)
- 2) Readings and on-line lectures
- 3) A quiz on the on-line materials (**completed by Wednesday 11:59 pm**)

Each week, in class, students will:

- 1) Take a team readiness assurance-test (t-RAT) and review on-line material
- 2) Complete an In-Class Activity that reinforces the 'Fundamental Science Topic' & 'Framework Topic' and practices the 'Science Skill' for that week (usually turned in on-line the day after the class meeting)

In addition, students will work on a semester-long group project, both in and outside of class that will develop a novel approach to addressing one or more specific climate change-related problem. Students are required to bring a laptop or other web-enabled device (though use of a smart phone is not advised). Students are also required to participate in midterm exam one evening of the semester.

## COURSE WEBSITE and COMMUNICATION

### Course Website

The course will run via **Canvas** through the UF e-learning website; go to <http://lss.at.ufl.edu/> and click on the Canvas Login button. The course site will be used to post relevant announcements, reading, lecture materials, links, assignments and quizzes, etc. You are responsible for checking this site for updates, announcements and to verify that your grades are recorded correctly. No grade will be changed more than one week following the date it was turned in. It is recommended that students adjust Canvas settings so that Announcements are sent to phone or email.

Questions and Comments on course logistics (e.g. assignments, grading etc.) and on content (e.g. science or policy questions directed toward any of the course instructors) should be posted in two respective discussion boards within the course website. Questions of a personal nature (e.g. medical emergency, legal, documented disability accommodation, etc.) should be sent to the TA via email who will forward these to the faculty instructor as necessary.

### Required Textbook

*Dire Predictions: Understanding Global Warming*, by Mann and Kump, 2009, Prentice Hall (\$15 new on Amazon or at the UF bookstore for about \$37). The 2<sup>nd</sup> edition of this textbook is just out and may be used if preferred. In addition, there will be numerous selected readings posted or linked through the course website weekly.

## ASSESSMENTS AND GRADING

### Final Grade Calculation

15%	<u>Homework:</u>	
	3%	12 'Spark' Discussions (2 lowest dropped) [0.3% each = 3 pts]
	12%	12 Quizzes (2 lowest dropped) [1.2% each = 12 pts]
10%	<u>In-class Quiz</u> (group t-RAT), 12 quizzes, 2 lowest dropped	[1% each = 10 pts]
30%	<u>In-class Activities</u> (some individual, some group work), 12 assignments, 2 lowest dropped	[3% each = 30 pts]
30%	<u>Final Project</u>	
	Initial Proposal (group assessment)	[3% = 30 pts]
	Hypothesis/Source (group assessment)	[4% = 40 pts]
	Quant. Method (group assessment)	[4% = 40 pts]
	Final Presentation (group assessment)	[8% = 80 pts]
	Final Paper (group assessment)	[8% = 80 pts]
	Effort (individual/team assessment)	[3% = 30 pts]
15%	<u>Mid-term Exam</u> (Curved* to a median of 85%, No Final Exam)	[15% = 150 pts]

### Final Grade Scale

A = ≥93%, A- = 90-92.99, B+ = 87-89.99, B = 83-86.99, B- = 80-82.99, C+ = 77-79.99, C = 73-76.99, C- = 70-72.99, D+ = 67-69.99, D = 63-66.99, D- = 60-62.99, E < 60

**\*Note:** Curving will be done using the Canvas gradebook tool which adjusts scores as a bell curve. The scores will be curved so that 66% will fall within 1 standard deviation of the median score which will be 85%.

**\*Note:** A grade of 'C-' or below does not qualify for major, minor, Gen. Ed., or college basic distribution credit.

For further information on UF's Grading Policy, consult:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

## Discussions

Students have from the end of class (Thursday 3:50 pm) till Sunday 11:59 pm to complete the on-line 'Spark' Discussion. Each student should make one substantive original comment and one substantive response to the comment of another student. That is, students must read what has been said before and add something more than a few words of agreement or disagreement. No credit will be given for late submissions.

## Quizzes and Exams

Each week students must take a 30 min. quiz on Canvas by midnight of the date before class consisting of 12 multiple choice questions (open book) on the lecture and reading material presented on-line that week. These quizzes cannot be made up or taken late if missed except for when because of an excused absence.

At the start of class each meeting day, students will take a team-Readiness Assurance Tests (tRAT) consisting of 5-10 multiple-choice questions based on the on-line material of that week. Some of these questions may have appeared in the Canvas Quiz of that week. Team answers will be recorded on scratch-off cards that will be provided (if the team does not uncover a correct answer, they continue to discuss the question and sequentially select other choices, but receiving progressively lower scores: half for 1 scratch,  $\frac{1}{4}$  for 2 scratch before getting the correct answer). All team members present will receive the same score. These quizzes cannot be made up or taken late if missed except for when because of an excused absence. Individuals (for quiz questions) or teams (for t-RAT questions) can submit a written appeal to their TA for questions they got incorrect along with their rationale and defense for their alternate answer.

The Midterm Exam will be given on campus in the evening of Monday Oct. 5 (7 pm), closed book, 2 hour limit. Students must bring a laptop to take the exam which will consist of about 50 multiple choice questions (some taken from quizzes, some new). Everything associated with the class up to the point of the exam (Weeks 1-6), including on-line material and in-class discussion/exercises, is fair game on the mid-term exam. If there is an issue with attending the exam at this time, it should be discussed with the TA at least one week prior to the date.

## In-Class Activities

For each class meeting, there will be a team assignment (short essay, a few short answer questions, spreadsheet calculation etc.) to be completed and turned in, usually via Canvas (Assignment Tab) by the evening of the day of class (11:59 pm). Exceptions may be granted by special arrangement with the TA. Individuals absent or not fully participating will lose up to 6 of 30 points and assignments submitted late will also lose 6 of 30 possible points. These assignments will not be accepted after 1 week following the class. Full credit will be awarded as follows:

- 6 points – Individual was present and fully engaged
- 6 points – Assignment was submitted by the due date
- 6 points – Content: demonstrates complete competence in the terminology, concepts, methodologies
- 6 points – Critical Thinking: assignment is focused, coherent, and successfully integrates examples with explanations, supporting evidence and analysis
- 6 points – Communication: communicates concepts and reasoning clearly and effectively in written or oral forms appropriate to the discipline

## Semester Project

Students, in groups of 3-4, will be asked to work as a team to create and evaluate either a strategy to mitigate or adapt to climate change. The strategies will range widely, e.g., from a solar-powered bicycle to a change in international law. But we encourage student groups to consider a local or regional problem and solution. Each group will also quantitatively evaluate the cost and/or potential impacts that would result from the adoption of their strategy (climate, human health, economic, etc.). During the course of the semester, both lectures and sub-assignments will build students' skills and the knowledge base needed for this kind of problem solving. At the end, both an oral and a written presentation will be due. More details can be found on the course website.

## Extra Credit/Field Trip

Those attending the field trip on the announced day will receive extra credit (1% added to final grade tally). Possibilities for additional extra credit may (or may not) be announced during the semester. These will be available to all and will not be offered on an individual basis.

## COURSE AND UNIVERSITY POLICIES

### Attendance and Absence

Students are expected to complete all requirements (quizzes, exams, presentation) on the specified dates and will not be granted an alternate date unless they have an acceptable reason for their absence (e.g., absences due to medical emergency, observance of religious holidays, military obligation, etc.) and pre-arranged consent of the instructor. These requests must be timely and accompanied by all necessary written documentation. This policy is accordance with UF's attendance policies, which can be reviewed further at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>. Discussions, quizzes and assignments turned in late will suffer a loss of points spelled out in each section above. No assignment can be turned in more than 1 week after its due date without instructor consent.

### Grade Appeals

Students or student groups who feel that their quiz, discussion, in-class activity or semester project was graded unfairly or incorrectly should make an appointment with their TA to discuss the issue. If students are still dissatisfied with the resulting explanation or action, they should then make an appointment with the lead instructor to discuss the issue.

### Classroom policy

Students are required to bring to each class meeting a laptop or similar device for use in taking notes, summarizing in-class activities, and accessing the Internet. However, use of mobile devices and computers during class for purposes other than viewing readings or conducting sanctioned research is not allowed. Cell phones must be turned off during class. Students who receive or make calls or text messages or engage in other disruptive behavior during class will be asked to leave will not be allowed to turn in the assignment due on that day. Students should also bring pen/pencil and paper to each class.

### Academic Honesty Policy

Students must conform to UF's academic honesty policy regarding plagiarism and other forms of cheating. This means that 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 university specifically prohibits cheating, plagiarism, misrepresentation, bribery, conspiracy, and fabrication. For more information about the definition of these terms and other aspects of the Honesty Guidelines, see <http://www.dso.ufl.edu/sccr/process/student---conduct---honor---code/>. All students found to have cheated, plagiarized, or otherwise violated the Honor Code in any assignment for this course will be prosecuted to the full extent of the university honor policy, including judicial action and the sanctions listed in paragraph XI of the Student Conduct Code. For serious violations, you will fail this course.

### Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate.

### Accommodations for Students with Disabilities

Please do not hesitate to ask for accommodation for a documented disability. Students requesting classroom accommodation must first register with the Dean of Students Office (<http://www.dso.ufl.edu/drp/>). The Dean of Students Office will provide documentation to the student, who must then provide this documentation to the Instructor when requesting accommodation. Please ask the instructor if you would like any assistance in this process. Please provide this information to your TA within the first two weeks of the semester.

**Instructor Evaluation**

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

**Drop/Add/Withdrawal**

A student can drop/add during the drop add period with no penalty. After drop/add, a student who drops will receive a W until the date listed in the academic calendar. After that date, the student may be assigned an “E” (fail). Note: it is the responsibility of the STUDENT to withdraw from a course, not the instructor. Failure to participate/complete the class is NOT a drop.

**Additional Resources**

Students facing difficulties completing the course or who are in need of counseling or urgent help may contact the Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc/Default.aspx>, 392-1575; or the University Police Department: 392-1111 or 9-1-1 for emergencies.

Other Resources available on-campus for students include:

- a. Student Mental Health, Student Health Care Center, 392-1171, personal counseling;
- b. Sexual Assault Recovery Services (SARS), Student Health Care Center, 392-1161, sexual counseling;
- c. Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.

**Weekly Climate Change Class Due Dates (Fall 2015: IDS 4930, Section 02AD / 222H)\***

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Spark due 11:59 pm			Finish module Quiz due 11:59 pm	Class 1:55 pm MAEB229 ICA due 11:59 pm		

\*this does not include due dates of assignments relating to the Semester Project

**COURSE SCHEDULE**

Fall 2015 Week Of:	Week	Module	Fundamental Science Topic	Framework Topic	Other Activities	Reading in 1 <sup>st</sup> Ed. <i>Dire Predictions</i> , pages
23-Aug	1	Introduction to climate and CC	Disciplines of climate change	Interdisciplinary Science		
30-Aug	2		Climate Drivers	Scientific Method		6-31
6-Sep	3		Climate History	How Science is Done		32-33, 40-43
13-Sep	4		Evidence for Anthro. CC	Uncertainty/Consensus		34-46
20-Sep	5		CC and the Weather	Research and Big Data	Intro. Semester Project (2 <sup>nd</sup> hr)	47-62
27-Sep	6		CC Projections	Models	Sem. Proj. Initial Proposals	63-105
4-Oct	7	Problems and Solutions	Ecological Impacts of CC	Team Science	Midterm Exam – Oct. 5 (7 pm)	107-127
11-Oct	8		Population/Consumption	Ethics /Sustainability	Field trip – Oct 17	128-139, 190-191
18-Oct	9		Agriculture/ Land Use	Communicating Science	Sem. Project Hypoth./Source	141-153
25-Oct	10		Energy	From Lab to the Real		155-169
1-Nov	11		Built Environment	Effecting Change	Sem Proj. Quant. Method Pres.	166-183
8-Nov	12	CC Policy	Environmental Policy	Science in Action		180-197
15-Nov	13		Sea Level Rise	Science in the Public Realm		98-99, 110-113, 148-149
22-Nov	x		----- No Class – Thanksgiving Week -----			
29-Nov	14	----- Semester Project Presentations During Class -----				
4-Dec	15	----- Semester Project Paper & Individual Assessment Due Dec. 11 -----				