

# **SYLLABUS**

ENV 2073

Global Warming: Science and Politics of a Contemporary Issue

University of South Florida

Fall 2011

Prof J.A. Cunningham

## **Course Description**

Non-technical introduction to the greenhouse effect and how human activities purportedly affect the global climate. Investigation of the relationship between science and the political process. Proposed policies to address global warming.

## **More About This Course**

This course is strongly inter-disciplinary, focusing not just on the science of global climate change, but equally on the policy and politics of global climate change. The first half of the course covers the science of global climate change in a non-technical manner that is easy for students to understand. The second half covers proposed solutions to the issue of global warming, both technical and political, and considers the advantages and disadvantages of these proposed solutions. Over the semester, students will formulate their own recommendations for a national policy regarding climate change.

## **Foundations of Knowledge and Learning Core Curriculum**

This course is part of the University of South Florida's Foundations of Knowledge and Learning Core Curriculum (also known as the General Education or Gen Ed program). This course is certified for the Physical Sciences core area, and for the following dimensions: Critical Thinking, Inquiry-based Learning, Environmental Perspectives, and Written Language. In addition, this course will emphasize many elements from the Scientific Processes dimension, although the course is not certified for that dimension.

## **Course Topics:**

- (1) Introduction to the earth's climate;
- (2) Science of the "greenhouse effect";
- (3) Hypotheses of how human activities affect the global climate;
- (4) Possible future effects of global climate change;
- (5) The nature of uncertainty in scientific predictions;
- (6) Relationships between the scientific process and the political process;
- (7) Proposed strategies (technical and political) to address global climate change;
- (8) Status of climate-change bills introduced in the U.S. Congress;
- (9) Status of international agreements for dealing with climate change.

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## **Course Objectives**

During this semester, students will:

1. demonstrate the ability to critically evaluate theories on how human activities may impact the global climate;
2. demonstrate knowledge of predicted future effects of global climate change and the uncertainty associated with those predictions;
3. investigate the relationship between the scientific process and the political process; and
4. formulate a recommended national policy to address global climate change, and will argue persuasively for their recommendation.

## **Student Outcomes**

During this course, students will:

1. gain a working knowledge of the theory of the “greenhouse effect” and its effect on the earth's climate;
2. critically evaluate arguments in the current debate over whether human activities are responsible for global climate change;
3. demonstrate knowledge of possible future effects of global climate change;
4. exhibit an understanding of uncertainty in scientific predictions and how the scientific process interacts with the political process; (Note: these two concepts are linked intentionally)
5. critically evaluate proposed strategies (both technical and political) to address human-induced global climate change; and
6. argue persuasively for a recommended course of action.

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## Core Area of Knowledge and Inquiry

The General Education curriculum at USF consists of six Core Areas of Knowledge and Inquiry. This course is certified for the Core Area of Natural Sciences. Students must satisfactorily complete at least six (6) credit hours of approved coursework in the Natural Sciences with at least one course taken from each category of Physical Sciences and Life Sciences. This course is certified in the category of Physical Sciences.

Courses in the Physical Sciences:

- must be introductory in nature and present (or have as a pre-requisite a college course that presents) the fundamentals of the physical science with relevant applications; and
- should emphasize scientific methodology by involving the students in making observations, evaluating data, and solving problems.

This course satisfies the Physical Sciences requirements in the following ways.

- This class begins with a non-technical introduction to fundamental concepts in earth science that pertain to the topic of global climate change. These include Course Topics 1 (Introduction to the earth's climate) and 2 (Science of the "greenhouse effect") as listed on page 1 of this Syllabus.
- This class introduces students to the scientific process through topics such as testable hypotheses, peer review, objectivity versus subjectivity, and the nature and value of scientific "consensus." These topics will be covered in class and in assigned readings in the course texts.
- In class, different data sets will be presented by the instructor along with an explanation of how those data have been used by scientists to draw conclusions about the earth's climate. Data sets may be selected from the course text book, from reports of the Intergovernmental Panel on Climate Change (IPCC), from peer-reviewed journal papers, and/or from mainstream media sources (newspapers, weekly magazines, etc.).
- In a group project, students will use scientific data to critically evaluate claims regarding the warming of the earth's climate and human influences on that putative warming.

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## General Education Objectives

The four Course Objectives listed above (pg 2) will lead to achievement of the following General Education objectives.

- A. Understand symbolic, expressive, and interpretive communication systems in all of their complexities.
  - 1. Written: Students will demonstrate well-organized, well-developed papers that reflect appropriate use of language. They will demonstrate specific knowledge, critical and analytical abilities, and appropriate use of technology consistent with assignment objectives.
- B. Confront with an inquiring mind the natural, social, technical, and human worlds and their interrelationships.
  - 1. Students will demonstrate an understanding of mathematics, the natural sciences, and technology, including historical context and interrelationships with other disciplines.
  - 2. Students will demonstrate an understanding of the social and behavioral sciences, including historical context and interrelationships with other disciplines.
- C. Understand theories and methodologies for producing knowledge and evaluating information.
  - 1. Students will demonstrate a general understanding of theories and methods of producing knowledge.
  - 2. Students will demonstrate critical thinking and analytical abilities, including the capacities to engage in inductive and deductive thinking and quantitative reasoning, and to construct sound arguments.
  - 3. Students will demonstrate an understanding of the scientific process.
  - 5. Students will demonstrate information literacy skills including: identifying appropriate questions, problems, or issues; determining appropriate sources of information; locating and evaluating necessary information; and analyzing, synthesizing, and applying the knowledge gained.
- E. Discover and pursue a meaningful life; Be a responsible steward of the human and physical environment.
  - 1. Students will demonstrate an understanding of how their decisions and actions affect the human and physical environment.
  - 3. Students will demonstrate intellectual development that emphasizes active involvement in the learning process and methods of formulating answers that support retention of critical facts and concepts.

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**Lectures:** Tuesdays and Thursdays, 3:30–4:45 PM, in CIS 1047

**Instructor:** Prof Jeffrey A Cunningham      ENC (Engineering Bldg III), room 3215  
cunning@usf.edu      974-9540

**Office Hours:** to be determined during the first week(s) of class  
approximately 3–4 hrs per week to meet with ENV 2073 students

**Credit:** 3 units, letter grade

**Grading:** Letter grade (including +/- modifiers), based on the following:  
Two in-class written examinations: 13.3% each  
Two major writing assignments (group projects): 26.6% each  
Homework: 10%  
Class participation: 10%

**Prerequisites:** none; open to all USF students regardless of major or class year

**E-Mail:** Outside of class, I will use e-mail to disseminate information. This will probably be done through the Blackboard software program. Make sure that Blackboard routes e-mail to your preferred e-mail address so that you won't miss any information.

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### Required Reading

Dessler AE and Parson EA, 2010. *The Science and Politics of Global Climate Change: A Guide to the Debate*, 2<sup>nd</sup> edition. Cambridge University Press: Cambridge, United Kingdom.

ISBN 978-0-521-73740-1 (paperback).

Intergovernmental Panel on Climate Change (IPCC), 2007. *Climate Change 2007: Synthesis Report. Contributions of Working Groups I, II, and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Pachauri RK and Reisinger A, eds.). IPCC, Geneva, Switzerland. Available free of charge via the Internet at [http://www.ipcc.ch/publications\\_and\\_data/publications\\_ipcc\\_fourth\\_assessment\\_report\\_synthesis\\_report.htm](http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_synthesis_report.htm)

*Note: pages 1–22 of the Synthesis Report are called the “Summary for Policymakers,” and these pages must be downloaded in a separate file from the rest of the Synthesis Report. Students may also wish to download the “front matter” which contains useful introductory material.*

National Research Council, 2011. *America’s Climate Choices*. National Academies Press: Washington, DC. ISBN 978-0-309-14585-5. Available free of charge via the Internet at <http://dels.nas.edu/Report/Americas-Climate-Choices/12781>

### Recommended Reading

Houghton J, 2009. *Global Warming: The Complete Briefing*, 4<sup>th</sup> edition. Cambridge University Press: Cambridge, United Kingdom.

National Academies, 2008. *Understanding and Responding to Climate Change, Highlights of National Academies Reports, 2008 Edition*. Available free of charge via the Internet at [http://dels-old.nas.edu/dels/rpt\\_briefs/climate\\_change\\_2008\\_final.pdf](http://dels-old.nas.edu/dels/rpt_briefs/climate_change_2008_final.pdf)

National Research Council, 2010. *Advancing the Science of Climate Change*. National Academies Press, Washington, DC. Available free of charge via the Internet at <http://dels.nas.edu/Report/Advancing-Science-Climate-Change/12782>

Silver J, 2008. *Global Warming & Climate Change DeMystified*. McGraw-Hill: New York, NY.

### Other Readings (some may be on reserve in USF Tampa library)

New books are appearing all the time on the topics of global warming and global climate change. Some of these are intended for academic purposes (e.g., university classes), and some are intended for a more general audience. A separate document will be provided that lists many books on the topic. You are encouraged to read as many of these as you can! However, please be aware that each book will have its own biases, and many may contain outright errors, or, at the least, may “spin” the facts to promote a particular political agenda. One of the goals of this class is that you learn to evaluate the validity and veracity of different arguments on this complex topic.

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## Course Schedule

The course schedule below is tentative. It is subject to change either in pace or in topics covered, although any changes to content will be minor. We will try to adhere to this schedule, but not to the point of detracting from students' learning the material.

Each topic will have assigned readings associated with it. The reading assignments will be given in class, usually about a week in advance. Please perform the required reading before the corresponding class to maximize your participation in the lectures.

Week 1	Aug 23	“Syllabus day”
	Aug 25	Introduction to climate and debate(s)
Week 2	Aug 30	Writing workshop (part 1)
	Sept 1	Writing workshop (part 2)
Week 3	Sept 6	Is our climate changing? (part 1 of 3)
	Sept 8	Is our climate changing? (part 2 of 3)
Week 4	Sept 13	Is our climate changing? (part 3 of 3)
	Sept 15	Science of the “greenhouse effect”
Week 5	Sept 20	Who/what is responsible for climate change? (part 1 of 3)
	Sept 22	Who/what is responsible for climate change? (part 2 of 3)
Week 6	Sept 27	Who/what is responsible for climate change? (part 3 of 3)
	Sept 29	Future effects of climate change (part 1 of 2)
Week 7	Oct 4	Future effects of climate change (part 2 of 2)
	Oct 6	<i>Exam #1</i>
Week 8	Oct 11	Role of science in decision-making (part 1 of 2)
	Oct 13	Role of science in decision-making (part 2 of 2); <i>First paper assignment due</i>

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### Course Schedule (continued)

Week 9	Oct 18	Strategies for addressing climate change: Adaptation & mitigation (part 1 of 2)
	Oct 20	Strategies for addressing climate change: Adaptation & mitigation (part 2 of 2)
Week 10	Oct 25	Strategies for addressing climate change: Geoengineering and Technical Solns.
	Oct 27	Legislative process in the United States ( <i>tentative...may be re-scheduled</i> )
Week 11	Nov 1	Carbon tax vs cap-and trade (part 1 of 2)
	Nov 3	Carbon tax vs cap-and-trade (part 2 of 2)
Week 12	Nov 8	International treaties – Kyoto and beyond (part 1 of 2)
	Nov 10	International treaties – Kyoto and beyond (part 2 of 2)
Week 13	Nov 15	Writing workshop <i>or</i> Class debate on climate-change policy
	Nov 17	Writing workshop <i>or</i> Class debate on climate-change policy
Week 14	Nov 22	<i>Exam #2</i>
	Nov 24	<i>Thanksgiving – no class</i>
Week 15	Nov 29	Group letter to our elected officials (e.g., U.S. Senators from Florida)
	Dec 1	Wrap-up, review, and course evaluations
Week 16	Dec 6	<i>Second paper assignment due</i>

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## **Class Policies: 1., Grading**

- Each student will receive a letter grade for the course.
- Grades may contain a +/- modifier (e.g., A-, B+, etc.).
- A student's grade will be determined by performance on two in-class examinations, performance on two significant writing assignments (to be completed in groups), class participation, and performance on homework assignments (which will usually be linked to in-class activities). Weighting for these was given previously in the syllabus.

## **Class Policies: 2., Attendance and Participation**

- Attendance in class is recommended in order to maximize the learning experience.
- Attendance is not strictly required, and it is not necessary to provide reasons or documentation for missed classes.
- Class participation will count towards 10% of the semester grade, so repeated absence from class will have a negative impact on a student's grade (i.e., you can't participate if you are not present in class). One or two absences is not likely to have a significant effect on a student's grade, but habitual or repeated absence -- even for reasons that a student deems "valid" -- will almost certainly have a negative impact.
- In class, students are expected not to engage in behavior that might be disruptive or distracting to other students. This includes the use of laptop computers for any purpose other than taking notes related to the class. If a student doesn't feel that he/she can be properly attentive in class, then he/she should not attend at all.
- Students should *turn off telephones* (and/or any similar devices) prior to the start of class.
- *No texting during class.*

## **Class Policies: 3., Homework Assignments**

- Each week, students will be assigned reading (in the "required" texts for the class) related to the topics to be discussed in class.
- In addition to the reading, students will be asked to find articles (newspapers, magazines, etc.) related to the class topics, and to bring those articles to class.
- From time to time (i.e., not every class), students will be asked to complete some in-class activity related to the reading and to the article(s) they found. In-class activities might include discussion, written questions to be completed individually, group writing, or anything else I can think of.
- The outputs of in-class activities will be graded and will count for 10% of your semester grade.
- Attending class and arriving on time will help your homework score -- you can't complete in-class activities if you are not in class.

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## **Class Policies: 4., Examinations and Quizzes**

- There will be two in-class written examinations during the semester.
- During tests, students may not confer with other students or with people outside the class.
- Laptop computers are *not* allowed during examinations or quizzes.
- Examinations may be open-note or closed-note at the instructor's discretion. The instructor will inform students of the examination format sufficiently in advance of the examination.
- Tentative dates for the examinations are: the Thursday of the 7<sup>th</sup> week of class, and the Tuesday of the 14<sup>th</sup> week of class.
- Any changes to these dates will be announced sufficiently ahead of time to allow adequate preparation and scheduling.
- There will be no final examination administered during final examination week.
- Students who will not be available for one of the examinations should inform the instructor far enough *before* the examination to make alternate arrangements.
- Students who miss an examination unexpectedly (e.g., due to sudden illness, family emergency, or other unforeseen circumstances) must provide documentation or evidence of the reason for missing the exam. It will then be *up to the instructor's discretion* whether a "make-up" exam will be offered.

## **Class Policies: 5., USF Statement on Academic Accommodations for a Disability**

Students in need of academic accommodations for a disability may consult with the Office of Students with Disabilities Services to arrange appropriate accommodations. Students are required to give reasonable notice prior to requesting an accommodation.

*(Instructor's note: The Americans with Disabilities Act is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Office of Services for Students with Disabilities at 974-4309 as soon as possible.)*

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## **Class Policies: 6., Group Projects**

- There will be two major writing assignments during the semester, to be completed by groups of two, three, or four students (depending on the total enrollment of the class).
- Topics for the writing assignments will be given by the instructor. The first assignment will be related to the science of global climate change, and the second will be related to policies for addressing global climate change.
- Both assignments aim to engage students in *critical thinking* and *inquiry-based learning*.
- Tentative due dates for the two assignments are the Thursday of the 8<sup>th</sup> week of class and the Tuesday of final exam week. Any changes to these dates will be announced sufficiently ahead of time to allow adequate preparation and scheduling.
- In general, all students in a group will receive the same grade on the assignment. However, the instructor may arrange for a mechanism by which students evaluate the contributions of their co-workers, and these assessments may factor into the students' grades.
- Plagiarism will result in *zero credit on the assignment*. This could lead to failure of the course and an F or FF grade on the offending students' transcripts. Students are responsible for making sure that members of their own groups do not plagiarize.
- Rough drafts will be submitted and will be reviewed by other student groups in the class (peer review). Part of a group's grade on the assignment will be based on how thoroughly and conscientiously they review their fellow students' work.
- Late work will be penalized at a rate of 20% per day.
- A recommendation of USF's General Education council is the following: "Courses with a focus on writing must address the following interrelated components: Systematic organization, Effective use of detail, Compelling treatment of evidence, Demonstration of reasoning skills, Appropriate consideration of audience, Language use (style) appropriate to discipline and audience, [and] Construction and analysis of valid and sound arguments." Students' written work will be evaluated (in part) on these seven criteria.
- Additional information and parameters for the writing assignments will be provided as the semester proceeds.

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## Class Policies: 7., Academic Honesty

- Any handouts used in this course are copyrighted. “Handouts” means all materials generated for this class, which include, but are not limited to: syllabi, notes, quizzes, exams, in-class materials, and review sheets. This includes materials that are posted on the web as well as materials distributed in class. Because these materials are copyrighted, you do not have the right to copy the handouts unless the instructor expressly grants permission.
- Lectures may be recorded *only* for the private use of students registered for the class.
- Notes and/or recorded lectures may not be sold.
- No form of scholastic dishonesty (cheating, plagiarism, etc.) will be tolerated. As commonly defined, plagiarism consists of passing off as one’s own the ideas, words, writings, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you have permission of that person. This includes copying material from books, reports, journals, pamphlets, handouts, other publications, web sites, etc., without giving appropriate credit for those ideas and/or without identifying material as quotations when taken directly from another source.
- Students are *strongly encouraged* to complete USF’s on-line plagiarism tutorial, which may be found at: <http://www.cte.usf.edu/plagiarism/plag.html>
- Violation of these rules -- *even unintentionally!* -- can result in disciplinary action including a grade penalty, up to and including an F or FF in the course, suspension, dismissal, and expulsion from USF. If you have any questions regarding plagiarism or other forms of scholastic dishonesty, please consult the relevant sections of the USF student catalogs, and/or ask the instructor.

## Class Policies: 8., USF Statement on Emergencies

In the event of an emergency, it may be necessary for USF to suspend normal operations. During this time, USF may opt to continue delivery of instruction through methods that include but are not limited to: Blackboard, Elluminate, Skype, and email messaging and/or an alternate schedule. It’s the responsibility of the student to monitor Blackboard site for each class for course specific communication, and the main USF, College, and department websites, emails, and MoBull messages for important general information.

(Instructor’s note: examples of “emergency” could be a hurricane, outbreak of contagious disease, etc.)