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Webpage: http://faculty.unlv.edu/lachniet/Global_Warming.html
Office Hours: Tuesday/Wednesday 2:30-3:30 pm

Textbook/Materials:

- Climate Change, The science of global warming and our energy future, by Edmond A. Mathez (<http://www.cup.columbia.edu/book/978-0-231-14642-5/climate-change>). Colombia Press. (\$55)
- Clicker: iClicker (<http://www.iclicker.com/Products/iclicker/>) (~\$40)
- *Optional:* for the full story see Climate Change 2007: The Physical Science Basis. Working Group I Research summary by the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (4AR), available for free at www.ipcc.ch

Full Course Description

GEOL 110 is an introduction to the science of global warming. The course will include an in-depth investigation of the documentary and observational evidence of recent changes in the Earth's climate system and greenhouse gas concentrations (GHGs). The course will include an introduction to climate and weather. We will cover the role of atmospheric greenhouse gases in the modern climate and their role in warming the planet, as well as provide a past history of GHGs from ice cores. We will also investigate the role of positive and negative feedbacks in the climate system, and the difference between past climate changes and the current anthropogenic global warming. We will define the radiative forcing associated with GHGs, and look at how sensitive the climate system is to changes in GHG concentrations. The course will also include responses to several pseudo-scientific claims regarding the anthropogenic role in global warming, and emphasize studies published in the peer-reviewed literature.

Course Outline

1. Chapter 1: Climate in Context (Chapter 1)
2. The Character of the Atmosphere (Chapter 2)
3. The World Ocean (Chapter 3)
4. The Carbon Cycle (Chapter 4)
5. A Scientific Framework for thinking about Climate Change (Chapter 5)
6. Learning from Past Climates (Chapter 6, aka Paleoclimatology)
7. A Century of Warming and some consequences (Chapter 7).
8. More Consequences: The sensitive Arctic and sea-level rise (Chapter 8)
9. Climate Models and the Future (Chapter 9)
10. Energy and the Future (Chapter 10)

Learning Outcomes:

By the end of this class, students will have demonstrated proficiency in the following learning outcomes: 1) understand radiative properties of CO₂, CH₄, and other long-lived greenhouse gases; 2) understand the role of H₂O as a short-lived GHG; 3) be able to discuss various positive and negative feedbacks in the climate system; 4) understand the difference between weather and climate; 5) be able to articulate how the atmosphere and ocean influence climate; 6) be able to summarize the key findings from ice cores, marine cores, and other paleoclimate proxy evidence for past climates; 7) identify key areas, such as the arctic, in the response of the climate system to anthropogenic GHG concentrations; 8) be able to discuss the workings of climate models and their output; 9) understand the link between climate and sea level; and 10) understand the fundamentals of the carbon cycle, and how energy use impacts GHG concentrations in the atmosphere. Student satisfaction of the learning outcomes will be assessed by in-class quizzes, exams, assignments, and participation.

Student responsibilities

Students' responsibilities will include a) attending lectures, b) taking lecture notes to supplement assigned readings, c) taking exams, and d) completing exercises. Examinations will cover material from classroom lectures, assignments, and other assigned readings.

Attendance

I will take attendance throughout the semester. Attendance in lecture is required. You may fail the class if you have more than **FIVE unexcused absences**. It is your responsibility to attend and be on time for class. It is the student's responsibility to inform the instructor no later than the last day of late registration of classes to be missed for religious holidays.

Grading policy

Your grade for this class will be determined by your exam scores.

Exam 1 (not cumulative)	25%
Exam 2 (not cumulative)	25%
Assignments/quizzes/ Final Project	20%
<u>Final Exam (cumulative)</u>	<u>30%</u>
Total	100%

Grade ranges (with + and -) will be assigned by percentage as follows: $\geq 90\%$ = A; 80 to 89% = B; 70 to 79% C; 60 to 69% = D, < 60 = F.

Final Exam 2012 is Tuesday May 8, 1:00-3:00 PM

What do the grades mean?

"A" = exceptional performance and demonstration of expertise

"B" = above average but not exceptional, demonstrating proficiency but not expertise

"C" = average; student has attained basic competency in the course material

"D" = below average

"F" = the student has not demonstrated a basic level of competency in the course material.

To earn an "A" in this class, you should demonstrate exceptional knowledge of the course material. An "A" typically requires that you should: 1) read *all* of the assigned readings, 2) attend class every day and arrive on time, 3) know all of the terminology and be able explain the concepts discuss in lecture, 4) perform well on exams, and 5) complete all assignments. Students who are naturally curious and ask questions are more likely to perform at a high level.

How much time should you spend studying outside of class to attain expertise? A general rule of thumb is 2 to 3 hours of studying for each credit hour you are taking.

Cell Phone and Electronic Device Policy:

It is simple: Don't use them. Your peers' time is valuable, and please respect everyone's right to a disruption-free learning experience. It is disrupting and disrespectful to use cell phones, send text messages, or leave the room to answer a cell phone call while class is in session. Texting in class or leaving for phone calls will result in removal from class and count as unexcused absences.

Cheating

Cheating and plagiarism will result in a failing grade for this course and may result in your expulsion from the University. We work on an honors system consistent with UNLV Office of Student Conduct policies (<http://studentconduct.unlv.edu/>). Please inform me if you are aware of cheating.

Special Assistance

If you have a documented disability that requires assistance, you will need to go to Disability Services (DS) for coordination in your academic accommodations. DS is located within the Learning Enhancement Services office in the Reynolds Student Services Center, room 137. The DS phone number is 702-895-0866, or TDD 702-895-0652.

A note on questions: All questions are GOOD questions. But, in-class questions are for clarifications and uncertainties, not a substitute for reading the book!