

Physics 101
The Day After Tomorrow: Global Climate and Extreme Weather
Fall 2005 Syllabus

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Class and Laboratory Meeting Time: MWF 1:30-3:00 PM

Office Hours: MW 3:00-4:00 PM, T Th 10:00-11:00 AM, or by appointment

Online Course Materials: Blackboard, <http://austincollege.blackboard.com/?bbatt=Y>

Course Description

A recent Hollywood movie depicts worldwide devastation cause by global climate change, including giant tornadoes in Los Angeles, extreme blizzards in New Delhi, and severe flooding in New York. Could this dramatic transformation of Earth really happen? In this course, we will explore the science of global climate change and extreme weather. Through lectures and laboratory experiments, students will gain an understanding of Earth as a system of interacting components (atmosphere, ocean, Earth's interior, and biosphere). Students will use current weather observations and the scientific method to understand our changing weather. Extreme weather events such as tornadoes and hurricanes will likely be explored.

The precise content of this course will be determined from your questions of the movie "The Day After Tomorrow". At the beginning of the semester, we will watch the film and list extreme climate and weather phenomena depicted in the movie. Ultimately, we will address the scientific foundations of "The Day After Tomorrow" and assess the climatic future of planet Earth.

Course Objectives

- To promote problem solving and critical thinking
- To explore Earth as a complex system of interacting "spheres"
- To promote awareness of weather, climate, and environmental issues
- To introduce students to meteorological concepts using current weather observations via the Web
- To help students recognize science in their everyday lives
- To provide an opportunity for students to explore their own scientific ideas

Required Texts

Moran, J. M., *Online Weather Studies*, 2nd Edition, American Meteorological Society (2002).

Online Weather Studies Investigations Manual, 8th printing, American Meteorological Society (2005).

Roles and Responsibilities

You are expected to take an active role in your learning. Perhaps in some of your previous courses, the instructor's role was to provide information and your role was to take notes and memorize the material. Things are different in this course. The instructor will provide a stimulating intellectual environment for you to ask questions, to explore new ideas, to communicate these ideas in oral and written form, and to expand your scientific knowledge and perspective. How much you learn and how much you grow depends on you. Your responsibilities include:

- *Active engagement in learning activities.* This course will utilize a variety of learning approaches. Although there will be some traditional lectures from the professor, there will also be classroom discussions and hands-on activities during regular lecture time. The traditional separation between lecture and lab will not exist in this class—lectures, discussions, and lab exercises will be integrated. You should be prepared to participate fully during all meeting times.
- *Attendance at all class meetings.* This course focuses on student participation and small group interaction. To get the full benefit from this class (and other college courses as well), you should attend all class sessions.
- *Careful reading of the textbook.* Our classroom discussions and lectures will assume a certain familiarity with climate and weather concepts. You are expected to read the appropriate sections in your textbook before class. To encourage textbook reading, weekly online quizzes will be administered.
- *Academic integrity.* In this course, you will be working often in small groups in the laboratory to complete assignments. We encourage collaborative learning with your peers. However, all written assignments, quizzes, and exams must be your own work. Plagiarism and cheating will not be tolerated and will result in failure of this course. Please refer to the Academic Integrity section below for more details.

Course Activities and Assignments

- *Participation.* Active participation in this course is expected, and attendance at all sessions is required. You will be responsible for leading a weather briefing at least once during the semester.
- *Quizzes.* Quizzes on course material (including lectures, laboratory work, and reading) will be offered each week. We will use Blackboard to administer these quizzes. Each quiz will be posted to Blackboard by Friday, 5:00 PM. You will need to complete the quiz by Monday, 5:00 PM. You may use your textbook, laboratory exercises, and class notes on the quiz. However, you may not consult with other students; the academic integrity policy will be strictly enforced. The two lowest quiz scores will be dropped.
- *Laboratory Activities.* Laboratory activities will be integrated into the “lecture” meeting time. The exact days for laboratory activities will vary each week. The lab component of the course will include two basic types of activities: 1) Online Weather Studies exercises and 2) Hands-on activities and experiments. The instructor must check your laboratory work before you leave. Answer sheets for Online Weather Studies must be turned in at the end of the activity.

- *Scientific Inquiry Portfolio.* A Scientific Inquiry Portfolio will be kept during this semester to help you recognize science around you and to document your scientific growth. Portfolios will be shared with the professor during individual conferences at the middle and at the end of the semester. Guidelines for the Scientific Inquiry Portfolio will be distributed separately.
- *Exams.* This course will have three exams during the semester. The main purpose of these exams is for you to synthesize concepts of Earth system science and apply them to a new situation. Please refer to the schedule below.

Grading

Class Participation	10%
Quizzes	15%
Laboratory	25%
Scientific Inquiry Portfolio	20%
Exams	30%
Total	100%

<u>Grading Scale</u>	
A	90-100
B	80-90
C	70-80
D	60-70
F	below 60

The numerical values for specific letter grades may be changed at the discretion of the professor, but the minimum value will not be raised. For example, the minimum value for a B may be below 80 but it will not be changed to a value above 80.

Academic Integrity

A recent national survey suggests that college students and faculty have different perspectives on academic integrity and cheating. The following list provides a *partial* list of actions that Austin College faculty consider violations of academic integrity:

1. Turning in work done by someone else.
2. Working on an assignment with others when the instructor asked for individual work.
3. Receiving unpermitted help on an assignment.
4. Writing or providing a paper for another student.
5. Getting Q/A from someone who has taken test.
6. In a course requiring computer work, copying a friend's program rather than doing your own.
7. Helping someone else cheat on a test.
8. Falsifying lab or research data.
9. Fabricating or falsifying a bibliography.
10. Copying from another student during a test or examination without his or her knowing it.
11. Copying from another student during a test with his or her knowledge.
12. Copying a few sentences of material from a written source without footnoting them in a paper.
13. Turning in a paper either purchased or plagiarized, in large part, from a term paper "mill" or website.

14. Copying a few sentences of material from an Internet source without footnoting them in a paper.
15. Using unpermitted crib notes (cheat sheets) during a test.
16. Copying material almost word for word from any written source and turning it in as your own work.
17. Altering graded test and submitting it for additional credit.
18. Turned in a paper copied from another student.
19. Using a false excuse to obtain extension on due date.
20. Hiding or damaging library/course material.
21. Cheating on a test in any other way.
22. Cheating on a written assignment in any other way.

If you have questions about academic integrity issues, please do not hesitate to discuss these issues with the instructor.

Tentative Schedule

As previously stated, the exact content of this course will be determined from your questions of the movie “The Day After Tomorrow”. A more precise schedule will soon be distributed based on questions that you would like to explore. Nevertheless, this schedule will remain flexible to take advantage of current weather events. For example, we may investigate hurricanes sooner than originally planned if major hurricanes develop in the next few weeks.

Important Dates

Date	Activity
Oct 12	Exam 1
Oct 18	Portfolio Conference
Nov 9	Exam 2
Nov 28	Portfolio Conference, Final Portfolio Due
Dec 8	Exam 3 (3:00-5:00 PM)

Tips for Success

- Strive to learn, not for a letter grade.
- Plan ahead.
- Read the textbook! The additional information you will receive from the textbook will help you understand the complexities of weather and climate better than from just the lectures alone.
- Carry your portfolio with you.
- Ask for help! The professor will be happy to help out. You should also feel free to ask your fellow classmates for assistance.
- Have fun! Learning is much more rewarding if you participate.