Weather, Climate and Society

ATMO 336 - Andrea Hahmann
http://www.atmo.arizona.edu/hahmann/atmo336/atmo336.shtml
Department of Atmospheric Sciences
The University of Arizona

Fall 2000

Outline

This course examines basic weather phenomena, climate and climate change, and the associated effects on individuals and societies in the past and present. The possibility and implications of human-caused changes in the climate system are also discussed.

Class Hours:

Tuesdays and Thursdays 9:30–10:45 A.M.; Modern Languages Room 310.

Instructor:

Dr. Andrea N. Hahmann, Research Assistant Professor
Department of Atmospheric Sciences
Office: Physics and Atmospheric Sciences Bldg. (PAS), Room 524
Office Hours: Wednesdays 2:00–3:00 P.M.
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Teaching Assistant:

Blake T. Smith
Office Hours: Thursdays 12:30–1:30 P.M.
Email: bts@U.Arizona.EDU
Office: PAS, Room 510

Grading:

Homework will be given periodically during the semester. These are due **one week** after being assigned unless otherwise noted. All homework assignments will also be available on the class web page (see address above). Homework assignments turned in late will incur a grade reduction of 10% per week for that assignment. Homework will account for 20% of your final grade.

There will be three **in-class exams** and a **final exam**. Each exam will last approximately one hour. Exam grades will account for 30% of your grade. The final exam is scheduled for Tuesday December 12 from 8 a.m. – 10 a.m. The final exam will account for 20% of your grade.

A single **term paper** (up to 5 pages, excluding figures, titlepage and references) that summarizes an independent project will also be required. A more complete description of this assignment is given

separately. All papers must be typed and double-spaced. Term papers turned in late will incur a grade reduction of 10% per week, and will not be graded after the end of the semester. This paper will account for 30% of your grade.

Extra credit (up to 1% added to your final grade per extra credit assignment) will be given for attending out-of-class seminars and writing a one-page summary of the seminar lecture. These seminars will be announced throughout the semester and posted on the class web page.

Grading Summary:

In-class Exams:	30%
Term Paper:	30%
Homework:	20%
Final Exam:	20%
Total:	100%

Exam Policy:

You are expected to read the relevant chapters from the class notes. Exams will be taken from both the lecture material (including web pages and links therein) and the reading assignments.

Please contact the instructor (via e-mail, or phone message) as soon as possible if for any unexpected reason you are unable to be in class for an exam. A make-up exam will be arranged with sufficient proof. No make-up exam will be given if you fail to notify the instructor within 24 hours after the exam time.

Recommended Texts:

Basic Meteorology:

Meteorology, E. W. Danielson, J. Levin, and E. Abrams, McGraw-Hill, 1998.
Meteorology, R. A. Anthes, 7th edition, 1997.
Meteorology Today – An Introduction to Weather, Climate and the Environment, C. D. Ahrens, 5th edition, 1994.
The Weather Book – An Easy-to-Understand Guide to the USA's Weather, J. Williams, 1997.
Understanding Weather and Climate, E. Aguado and J. E. Burt, Prentice Hall, 1999.

Weather and Society:

Weather and People, M. D. Morgan and J. M. Moran, 1997.
Does the weather really matter? The social implications of climate change, W. J. Burroughs, 1997.

Climate and Society:

Climatic Change and Human Society, I. D. Whyte, 1995.
Earth – Evolution of a Habitable World, J. I. Lunine, 1999.
Global Warming, John Houghton, 1997.
Global Environmental Change: An Atmospheric Perspective, J. Horel and J. Geisler, 1997.
Climate History and the Modern World, H. H. Lamb, 1995.
Global Environmental Change – Its Nature and Impact, J. J. Hidore, 1996.
Geosystems – An Introduction to Physical Geography, R. W. Christopherson, 1997.
Atmospheric Change - An Earth System Perspective, T. E. Graedel and P. J. Crutzen, 1993. *The Climate Revealed*, W. J. Burroughs, 1999.

Syllabus

I. **Introduction** – Does the weather really matter?

II. **Atmospheric composition and structure**
Composition of the lower atmosphere
Water vapor and the hydrologic cycle
Carbon dioxide and the carbon cycle
Stratospheric ozone and the ozone hole
Air pollution and acid rain
Earth's energy balance and the greenhouse effect

III. **The atmosphere and the weather**
Pressure and winds
Water vapor in the atmosphere
Temperature, humidity, and human comfort
Clouds and precipitation
Severe thunderstorms and tornadoes
Tropical cyclones and hurricanes
Lightning and thunder
Severe weather impacts

IV. **Climate and the general circulation**
Weather versus climate
General circulation of the atmosphere and oceans
Causes of climate change
Ocean-atmosphere interactions - Monsoon ciculations

V. **Climate through human history**
Reconstructing climate
The climate of the Pleistocene
The climate of the Holocene
Climate and the rise of man
Climate of the last Millennium

VI. **Contemporary Climate**
Weather forecasting
Modeling climate
Climate models and their prediction of climate change
Potential impacts of global warming

Calendar

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Aug 21st	22nd **1** First Class	23rd	24th **2**	25th
28th	29th **3**	30th	31st **4**	Sep 1st
4th No Class Labor Day	5th **5**	6th	7th **6**	8th
11th	12th **7**	13th	14th **8**	15th Last Day to Drop Classes
18th	19th First Exam	20th	21st **9**	22nd
25th	26th **10**	27th	28th **11**	29th

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
Oct 2nd	3rd **12**	4th	5th **13**	6th
9th	10th **14**	11th	12th **15**	13th
16th	17th **16**	18th	19th **17**	20th
23rd	24th Second Exam	25th	26th **18**	27th
30th	31st **19**	Nov 1st	2nd **20**	3rd
6th	7th **21**	8th	9th **22**	10th
13th No Class Veterans Day	14th **23**	15th	16th **24**	17th

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
20th	21st Third Exam	22nd	23rd No Class Thanksgiving	24th No Class Thanksgiving
27th	28th **25**	29th	30th **26**	Dec 1st
4th	5th **27**	6th Fall semester ends	7th	8th
11th	12th Final Exam 8:00–10:00 A.M. MLNG 310	13th	14th	15th