

Portland State University

Department of Physics

Fall 2008

Physics 375: The Earth's Atmosphere:

Global Change and Human Life

(CRN 13012)

Instructor: Aslam Khalil, Professor

Time and Place: M & W 2:00-3:50 CH, Rm 183

Office Hours: M & W 4 -5; and 5-6 if needed SB2 Rm 410

Contact Information: Call anytime: (503) 725-8396 or FAX: (503) 725-8550

e-mail: aslamk@pdx.edu or khalilm@pdx.edu (Preferred means of contact)

SCHEDULE

Day Date Wk Lect

September

Foundations: The Atmosphere and Global Environmental Problems

M 29 1 1 Introduction. Nature and Scale of Global Atmospheric Issues

October

W 1 2 X Atmospheric Composition. <<Pre-Test Due>>

The Changing Atmosphere and the Role of Human Activities

M 6 2 3 Atmospheric Composition and Structure

W 8 4 Atmospheric Circulation

M 13 3 5 Global Budgets. Sources, Sinks and Trends

W 15 6 Atmospheric Chemistry and Other Sinks

M 20 4 7 Observed Past and Current Trends

The Greenhouse Effect and Global Warming

W 22 8 Greenhouse Effect

M 27 5 9 X Global Warming and Climate Change <<Progress Report #1: Oral >>

W 29 10 Climate Change

November

M 3 6 X <<Problem Set 1 Due>> Review and Problem Solutions

W 5 X <<Mid-term Exam>>

Ozone Depletion

M 10 7 11 The Stratospheric Ozone Layer

W 12 12 X Consequences of Ozone Depletion <<Progress Report #2: Outline+Assignments>>

M 17 8 State of the Chlorofluorocarbons and Replacement Compounds

W 19 14 Connections Between Climate, Ozone Depletion and Other Issues

Environmental Management Issues

M 24 9 15 Economic Issues

W 26 X <<Problem Set 2 Due>> << Post-Test Due >> Problem Solutions and discussion

December

M 1 10 X <<Group Project Presentations>> Post-Test results

W 3 X <<Group Project Presentations>>. All Remaining Work Due

W 10 11 X <<Final Exam>> 12:30 - 14:20

See Notes on the Back

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Grading:

>or = 84%	A
74-83%	B
64-73%	C
50-63%	D
< 50%	F

Distribution

Exams	50%
Project	20%
Problem Sets	25%
Class participation	3%
Pre-Post Tests	2%
TOTAL	100%
Extra Credit (see notes)	5%

Group Research Topics

1. Is it practical to reduce global warming by planting more trees?
2. Why is there no ozone hole over the Arctic even though there is more pollution there?
3. Will feedbacks accelerate or reduce global warming?
4. Can we prove that global warming is being caused by human activities?
5. Is the global atmosphere losing the ability to remove pollutants?
6. What is the effect of Global Warming on water resources ?
7. Explain Sea Level Rise - Past, Present and Future
8. Is it possible to reduce global warming by engineering the atmosphere or the environment?
9. What role do automobiles play in global warming?
10. What do we lose if the ice sheets melt?

Notes:

- * Recommended Text: Atmospheric Change: An Earth System Perspective
T.E.Graedel and P.J.Crutzen (W.H. Freeman & Co, N.Y. 1993) Text
- * Additional articles and reading material will be distributed in class
- * Working knowledge of algebra, trigonometry and general physics is needed. Prep
- * Lowest % in grade range is a MINUS, highest is a PLUS (example, 84% = A - and 83% = B+) Work
- * Exams will be in class and closed book. You are allowed on 8.5" x 11" sheet of paper with your notes (both sides).
- * Term papers have to be presented both orally and in writing. The written term papers must be between 10 and 20 pages double spaced including figures, references and tables. Any amount of supporting material may be attached as appendices and referenced in the text.
- * Term papers may include one or more interviews with local experts
- * No late work will be accepted. Exceptions for dire circumstances only.
- * Extra Credit - Reworking Problem Sets (50% of missed points); Extra-Credit problem set.
- * Thinking of missing classes? Don't. Class participation score goes down one point for each class missed
- * This schedule is subject to change