

Senior  
U/A Atmos Chem + physics

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## *ATMOSPHERIC CHEMISTRY & PHYSICS*

Course #: 52:163, 3 semester hrs.

Instructor: G. R. Carmichael

125A CB

5-1399

Meets: Fall Semester

4:30 -5:30pm MWF

I will be offering a course on the fundamental chemical and physical processes of the major atmospheric trace gas cycles. This course is being offered as part of the NASA University Space Research Association Grant awarded to the Center for Global & Regional Environmental Research. The course is intended as an upper-level undergraduate & lower-level graduate students in engineering and the sciences. Topics covered include: trace gas sources and sinks, photochemistry, aqueous chemistry, atmospheric removal processes (wet & dry processes), aerosol science, atmospheric dynamics as they impact trace gas cycles, among others. Special attention to radiatively and biologically important trace gases and their role in global change. Course is quantitative, but should be suitable for scientists and engineers from broad backgrounds. Prerequisites include basic chemistry and physics. Please contact me if you have any questions.

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# Atmospheric Chemistry & Physics

MWF

4:30 to 5:30 pm

Gregory R. Carmichael  
125 A CB  
5-1399

**Text:** Atmospheric Chemistry and Physics of Air  
Pollution, J. H. Seinfeld, John Wiley, 1986.  
+ handout materials

## Topics:

1. Overview of global change issues
2. Bulk composition and physical structure of the atmosphere
3. Basic photochemistry of the atmosphere
4. Methane oxidation cycle
5. Oxides of nitrogen
6. Ozone in the troposphere
7. Hydrocarbon chemistry
8. Sulfur compounds in the atmosphere
9. Clouds and precipitation
10. Atmospheric aerosols
11. Stratospheric chemistry
12. Carbon cycle
13. Evolution of the atmosphere
14. Select topics: acid rain, global warming, and others

Senior

Atmospheric Chemistry & Physics  
MWF 4:30-5:45 p.m.  
203 CSB

<u>Date:</u>		<u>Topic:</u>
8/22	M	Overview of Course
8/24	W	Basic Structure of the Atmosphere
8/26	F	Basic Structure of the Atmosphere
8/29	M	Stratospheric Ozone: Overview
8/31	W	" " : Measurements
9/2	F	STELLA Demo
9/5	M	No Class - Labor Day
9/7	W	Stratospheric Ozone: Surface Rxns
9/9	F	" " : UVB
9/12	M	Data Sets/Network
9/14	W	" "
9/16	F	Stratospheric Ozone: Policy/Replacements
9/19	M	Oxidizing Capacity of the Atmosphere: Overview
9/21	W	" " " " " : Tropospheric Ozone
9/23	F	" " " " " :
9/26	M	" " " " " : Oxidation Cycle
9/28	W	" " " " " :
9/30	F	" " " " " : Trends & Cycles
10/3	M	To Be Announced
10/5	W	To Be Announced
10/7	F	No Class
10/10	M	To Be Announced
10/12	W	To Be Announced
10/14	F	No Class
10/17	M	Oxidizing Capacity of the Atmosphere: Trends & Cycles
10/19	W	" " " " " : Policy Issues
10/21	F	" " " " " : Policy Issues
10/24	M	Review
10/26	W	Exam
10/28	F	No Class
10/31	M	Greenhouse Gases, Aerosols & Climate: Overview
11/2	W	" " " " " : CO <sub>2</sub>
11/4	F	No Class
11/7	M	Greenhouse Gases, Aerosols & Climate: CO/CH <sub>4</sub>
11/9	W	" " " " " : Sulfur Cycle
11/11	F	No Class
11/14	M	To Be Announced
11/16	W	To Be Announced
11/18	F	No Class
11/21	M	No Class
11/23	W	No Class - Thanksgiving Holiday
11/25	F	No Class - Thanksgiving Holiday
11/28	M	Greenhouse Gases, Aerosols & Climate: Biomass Burning
11/30	W	" " " " " :
12/2	F	No Class
12/5	M	Recap !!!
12/7	W	To Be Announced
12/9	F	No Class

Gregory R. Carmichael	
Office:	202 IATL
Tel.:	5-3332 (IATL)
	5-1399 (CB)
email:	gcarmich@icaen.uiowa.edu
Office Hours:	
	3:00-4:00 M & W
	202 IATL

Class Grades:		
A.	Midterm	25%
B.	Homework	40%
C.	Final Project	35%