

Syllabus

GEOL-011 Survey of Atmospheric Science, Spring, 2010.

Meeting time: T, Th 4:30-05:45 PM

Meeting room: Science Building C-207

Instructor: Prof. Chuixiang (Tree) Yi

Office: E-222, Science Building

Office Hours: Friday 1:00-3:00 PM

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Course Description: Weather is an important part of our life, and the climate a part of our future. Temperature, humidity and air quality influence every moment of our life no matter where we are. Severe weather affects everyone on our planet. Hurricanes, hailstorms, tornadoes, snowstorms, ice storms, wind storms, floods, severe cold, heat waves and drought and other severe events occur daily. Global warming and ozone-depletion caused by human activities are two threats of future climate changes. Also, wonderful structures and colors of clouds, and beautiful sky make our life more enjoyable. This course explores the properties and processes of the Earth's atmosphere that create weather and climate. You will learn how to use simply basic principles to understand the weather phenomenon from this course. This course will help you to make educated decisions about issues ranging from vacation plans to automobile choices to government environmental policies.

Required Textbook:

Essentials of Meteorology: An Invitation of the Atmosphere, Fifth Edition by Ahrens

- Available at the Campus Bookstore at Queens College Student Union.
- You are welcome to look online for a cheaper version of this text.

Grading: Homework 15%, three exams (15% each), Final Exam 25%, Class Participation 15%.

Exam Dates: The exams are designed to see how well you understand concepts and processes, they will be mostly short answer/essay. There will be three in-class exams plus a comprehensive final exam.

Exam #1: 02/25/2009

Exam#2: 03/25/2009

Exam#3: 05/11-2009

Exam policy

- Midterms—multiple choice plus essay.
- Makeup exams—instructor must be notified before the exam.
- Makeup exams cannot be taken before the exam.
- Makeup exams will be all essay that are much harder than the regular exam.

Syllabus (may be modified as semester progresses!).

Lecture	Date	Topic	Reading
1	01/28/10 TH	The earth's atmosphere: composition and structure	Ch 1
2	02/02/10 T	Temperature and heat transport, radiation	Ch 1 & 2
3	02/04/10 TH	Basic laws of radiation, greenhouse effects	Ch 2; HW1
4	02/09/10 T	Earth's heat budget; earth-sun geometry and seasons	Ch 3
5	02/011/10 TH	Daily temperature and net radiation	Ch 3; HW1 due
6	02/16/10 T	Relative humidity, dew point temperature	Ch 4
	02/18/10 TH	No class	
	02/23/10 T	REVIEW	
	02/25/10 TH	EXAM#1	Chapters 1-4
7	03/02/10 T	Adiabatic processes, dry/moist adiabatic lapse rate	Ch 5
8	03/04/10 TH	Atmospheric stability	Ch 5
9	03/09/10 T	Absolute stable/unstable, conditional stable/unstable	Ch 5; HW2
10	03/11/10 TH	Cloud development, level of free convection	Ch 5
11	03/16/10 T	Fog weather and condensation	Ch 4; HW2 Due
12	03/18/10 TH	Precipitation	Ch 5
	03/23/10 T	REVIEW	Chapters 4-5
	03/25/10 TH	EXAM#2	
	03/29/10~04/05/10	SPRING RECESS	
13	04/06/10 T	Wind, air pressure, surface weather map	Ch 6
14	04/08/10 TH	Pressure gradient force, Coriolis force	Ch 6
15	04/13/10 T	Geostrophic wind, gradient wind, centripetal force	Ch 6
16	04/15/10 TH	Thermal circulations, land/sea breeze, Chinook, ...	Ch 7
17	04/20/10 T	Global atmospheric circulation and precipitation pattern	Ch 7; HW3
18	04/22/10 TH	Jet stream, El Nino and La Nina	Ch 7
19	04/27/10 T	Air masses and fronts	Ch 8; HW3 Due
20	04/29/10 TH	Mid-latitude cycles	Ch 8
21	05/04/10 T	Tornadoes and Hurricanes	Ch 10-11
	05/06/10 TH	REVIEW	
	05/11/10 TH	EXAM#3	Chapters 6-8, 10-11
	05/13/10 T	FINAL REVIEW	
		FINAL EXAM	Inclusive