

**EAS 10100: The Atmosphere
Fall 2020**

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Time: Monday/Wednesday 11:00am – 12:15pm;

Venue: Zoom (<https://ccny.zoom.us/j/93936757123>)

Office hours: M/W 12:15pm – 12:45pm or by appointment

General Description:

This class is intended to introduce to non-science majors an important branch of Earth Science – *the Atmosphere*. Over the past half a century, Atmospheric Science has evolved and expanded rapidly to include not just study of daily weather (i.e., traditional meteorology), but also topics such as global climate change and air quality. Meanwhile, new tools have been developed enabling further advancement of the field, including various Earth Observing satellites and advanced computer models. Of particular relevance to our current society are global challenges facing all of us, such as anthropogenic (man-made) global warming, severe weather hazards, ozone destruction, air quality problems, to name a few. In this class, students will get an exposure to all these modern subjects.

Textbooks

- *Essentials of Meteorology*, by C. Donald Ahrens, Cengage Learning, 6th edition or newer
(It is strongly recommended you obtain a copy of the textbook. You will need to access the book to finish reading and homework assignments. I found used ones sold on Amazon.com for about \$10.)

Grading:

- 25%: Homework
- 45%: Three in-class tests (15% each)
- 30%: Final Exam

Learning outcomes:

After taking this class, students are expected to be able to:

- Describe composition and structure of Earth's atmosphere
- Understand energy flow through the Earth-Atmosphere system
- Describe formation processes of clouds and precipitation
- Understand mechanisms for wind and atmospheric circulations
- Describe typical mid-latitude and tropical weather systems
- Understand how weather forecasting is performed
- Understand causes and consequences of climate changes
- Understand causes and consequences of air pollution

Course Outlines: (Note: weekly plan may be subject to small changes)

Week	Dates	EAS 10100: The Atmosphere	Notes
Week 1	Aug 26	Introduction, course goals, syllabus, etc.	
Week 2	Aug 31	Earth's Atmosphere composition & structure	
	Sep 2	Earth-atmosphere energy balance I	
Week 3	Sep 7	No class (Labor Day)	
	Sep 9	Earth-atmosphere energy balance II	
Week 4	Sep 14	Water in the atmosphere I	
	Sep 16	Water in the atmosphere II	
Week 5	Sep 21	Air motions I	
	Sep 23	Air motions II	
Week 6	Sep 29	Review for Test 1	
	Sep 30	Test 1	15%
Week 7	Oct 5	Atmospheric measurements I: conventional	
	Oct 7	Atmospheric measurements II: satellite based	
Week 8	Oct 12	No class (Columbus Day)	
	Oct 14	Air mass, fronts, and mid-latitude cyclones I	
Week 9	Oct 19	Mid-latitude cyclones II	
	Oct 21	Tropical cyclones (Hurricanes) I	
Week 10	Oct 26	Tropical cyclones (Hurricanes) II	
	Oct 28	Thunderstorms and tornadoes I	
Week 11	Nov 2	Thunderstorms and tornadoes II	
	Nov 4	Review for Test 2	
Week 12	Nov 9	Test 2	15%
	Nov 11	Weather forecasting	
Week 13	Nov 16	Climate Vs Weather	
	Nov 18	Climate variability	
Week 14	Nov 23	Climate Change I: natural	
	Nov 25	No class (Friday schedule)	
Week 15	Nov 30	Climate Change II: anthropogenic	
	Dec 2	IPCC reports on anthropogenic climate change	
Week 16	Dec 7	Air pollution	
	Dec 9	Review for Test 3	
Week 17	Dec 14	Test 3	15%
	Dec 16	Final review	
Week 18	TBA	Final Exam	30%