

## Physics 333 & Geography 333 – Weather

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<http://web.pdx.edu/~arice/weather/>

**Instructor:** Andrew Rice, 472 Science Building 2, arice@pdx.edu, 503-725-3095

**Office Hours:** Monday, Wednesday, 11:20-12, Friday 2-3, and by appointment

**Lectures:** Monday, Wednesday, Friday 10:15-11:20

**Location:** 413 Cramer Hall

**Credits:** 4

**Register:** PH 333 (crn 15029) or GEOG 333 (crn 15030)

**Required Textbook:** *Meteorology Today: An Introduction to Weather, Climate, and the Environment*, 8th Edition, by C. Donald Ahrens, Thomson Brooks Cole Publisher, 2007 (ISBN 0495011622)

**Text Website:** <http://now.brookscole.com/ahrens8>

*Meteorology Now* contains exploratory material for learning the material outside of class. There are interactive tools, animations, and practice tests. You will need to register using the ‘1pass’ included with your textbook. This online material is not required, but will help you comprehend the material introduced in class and by the text.

### **Texts on reserve:**

The Atmosphere: an introduction to meteorology, by F. K. Lutgens and E. J. Tarbuck

Understanding Weather and Climate, by E. Aguado and J. E. Burt

**Homework:** Assigned on Wednesdays due the following Wednesday at the beginning of class. Working with other students is acceptable, but write up your assignments on your own. Late homework will be marked off 25% per day. The lowest homework will be dropped from the final grade.

**Weather Journal:** Each Monday we will check the forecast for the week. Three times during the week, we will make observations and follow the forecast to note its accuracy. At the end of the term, your annotated forecasts and observations will be compiled and analyzed.

**Exams:** Exams are closed book. There will be no make-up exams.

**Midterm:** Monday, November 3, 10:15-11:20

**Final:** Wednesday, December 10, 10:15-12:05

**Grading**

Homework 35% (lowest homework will be dropped)

Weather Journal 10%

Midterm 25%

Final 30%

**Extra Credit:** Each Friday we will have a short ‘news and views’ section which will incorporate recent events or news. You are encouraged to participate by bringing in a weather or climate related news story during the quarter and share it with the class.

**Academic Honesty:** ‘Academic honesty is a cornerstone of any meaningful education and a reflection of each student’s maturity and integrity. The Student Conduct Code, which applies to all students, prohibits all forms of academic cheating, fraud, and dishonesty. These acts include, but are not limited to, plagiarism, buying and selling of course assignments for other persons, unauthorized disclosure and receipt of academic information, and other practices commonly understood to be academically dishonest’ – Portland State University Bulletin, General Catalog Issue, Vol. 40, No. 4, 2006-2007.

**Recommended prerequisite:** upper division standing or GEOG 210.

**Course Description:** Introductory course in the atmospheric environment providing a comprehensive understanding of atmospheric structure and the changes over time that result in the weather we experience. Topics include: atmospheric moisture (fog, rain, clouds), atmospheric stability and cloud development, air pressure and winds, air masses and fronts, and hurricanes and tornados.

*Everybody talks about the weather, but nobody does anything about it* – attributed to Mark Twain

*Weather forecast for tonight: Dark* – George Carlin

**Tentative Schedule** (subject to change)

**Week 1**

Introduction to course.

Chapter 1. The Earth's atmosphere, weather, and climate.

Chapter 2. Energy, heat transfer, and radiation.

**Week 2**

Chapter 2. Energy, heat transfer, and radiation.

Chapter 3. Seasons, temperatures, and controls.

**Week 3**

Chapter 4. Atmospheric moisture.

Chapter 5. Dew, frost, fog, and clouds.

**Week 4**

Chapter 6. Atmospheric stability and cloud development.

Chapter 7. Precipitation: rain, snow, hail.

**Week 5**

Chapter 8. Atmospheric pressure and winds.

Chapter 9. Small scale winds and systems.

**Week 6**

**MIDTERM** – November 3

Chapter 10. General (global scale) circulation.

**Week 7**

Chapter 11. Air masses and fronts.

Chapter 12. Mid-latitude cyclones.

**Week 8**

Chapter 14. Thunderstorms, tornadoes, and lightning.

Chapter 15. Hurricanes.

**Week 9**

Chapter 13. Forecasting weather.

Portland and Northwest weather

**Week 10**

Chapter 16. Global climate change.

Review Chapters 1-16

**Week 11**

**FINAL EXAM** – December 10, 10:15-12:05