



Governing Iowa's Public Universities

In accordance with [Board of Regents policy 3.20](#), the following required information is available below:

Fall 2026

I. Course title and number as designated in the institutional course catalog

EARTHSCI 1200 Elements of Weather, 01

II. A course description including learning objectives that students are expected to achieve by the end of the course

A. Course Description:

EARTHSCI 1200. Elements of Weather — 3 hrs.

Meteorological elements and their applications to environment; interpretation of weather maps and weather data; forecasting and briefing on daily weather.

Student Learning Outcomes include Critical Thinking and Scientific Reasoning.

Discussion, 3 periods. No credit for those who have completed EARTHSCI 3210/5210. (Fall, Spring, Summer)

B. Course Level Learning Objectives:

List the major gases and layers composing earth's atmosphere

Explain how changes in sun angle and length of daylight result in seasonal changes in temperature

Name the principal controls of air temperature

Summarize the phase changes of water and indicate whether energy is absorbed or released in the process

Describe the differences between dew point temperature and relative humidity as measures of atmospheric moisture

Describe adiabatic temperature changes and stability

Identify types of clouds and explain how precipitation forms

List and describe the forces that act on the atmosphere to produce or modify winds

Describe the major features of the general circulation

List and describe properties of North American air masses

Describe the general weather conditions associated with a cold front, a warm front, and the passage of a mature midlatitude cyclone

Describe characteristics of air mass thunderstorms and severe thunderstorms

Discuss the conditions that promote hurricane formation and list the factors that cause hurricanes to dissipate

Describe basics methods used to produce a weather forecast



Governing Iowa's Public Universities

III. A general outline of the topics to be covered throughout the course:

1. Introduction to the Atmosphere
2. Heating Earth's Surface and Atmosphere
3. Temperature
4. Moisture and Atmospheric Stability
5. Forms of Condensation and Precipitation
6. Air Pressure and Winds
7. Circulation of the Atmosphere
8. Air Masses
9. Midlatitude Cyclones
10. Thunderstorms and Tornadoes
11. Hurricanes
12. Weather Analysis and Forecasting
13. Air Pollution
14. Optical Phenomena of the Atmosphere

IV. List of required textbooks, readings, and other materials necessary for the course

The Atmosphere: An Introduction to Meteorology, Frederick Lutgens and Edward Tarbuck, 14th Edition, Pearson. 978-0134758589

V. General description of the types of assessments used in the course (e.g., exams, papers, projects, experiential learning):

Reading, In-class practice, Discussions, Five homework assignments, Five tests