

## Inquiry approaches to Climate, Weather, and Energy in the 6-9 Classroom

University of Iowa  
07E:340:WKB

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Seaman's Center, Room 4511

### STAFF

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### COURSE DESCRIPTION

The goal of this workshop is to provide teachers the opportunity, background knowledge, and confidence to improve student outcomes regarding climate, weather, and energy. Teachers are given access to sample curriculum, content experts, field trips, and hands-on practice at integrating simple scientific models that support conceptual understanding in Climate, Weather, and Energy (CW&E).

With the aide of workshop staff, participants will design simple scientific models that support the participant's existing curriculum goals. These models will range from non-technical (such as drawings and text) to versions that require some computer usage (such as graphing). Although climate and weather models are quite complex, workshop experiences will isolate elements of these models so they can be understood and effectively incorporated into the middle school science classroom.

### COURSE READINGS

Emanuel, Kerry. 2007. *Phaeton's reins: The human hand in climate change*. Boston Review.  
<http://bostonreview.net/BR32.1/emanuel.html>

Michaels, S., Shouse, A. W., & Schweingruber, H. A. 2008. Making thinking visible: Modeling and representation. In N. R. Council, *Ready, Set, Science! Putting research to work in K-8 science classrooms* (pp. 109-126). Washington, D.C.: National Academic Press.

### SUPPLEMENTAL READINGS (not required, but great resources)

Ruddiman, W.F. 2001. *Earth's Climate: Past and Future*. W. H. Freeman and Company. New York, NY.

Ahrens, D.C. 2000. *Meteorology Today: An introduction to weather, climate, and the environment*. Brooks/Cole. Pacific Grove, CA.

IPCC Summary for Policymakers. 2007. *Climate change 2007: The physical science basis*. WGI Fourth Assessment Report.

Sections of "Energy Environment and Climate" by Richard Wolfson. 2008 W. Norton Co., New York, NY.

Gilbert, S.W. and S.W. Ireton. 2003. Sections of "*Understanding Models in Earth and Space Science*". NSTA Press.

### GRADING POLICY\*

Pre-Assignment	20%
Final Project	40%
Attendance	40%

\* You may choose to take this course for either a letter grade or as Satisfactory/Unsatisfactory. In order to receive a "Satisfactory" in this course, your work quality must be equivalent to an A or B letter grade.

**ATTENDANCE/MAKE-UP POLICY**

Attendance is required for all participants and worth 40% of their final grade. Please note that attendance of each onsite session will be recorded. This is an important factor in the awarding of the continuing education credits by the Grant Wood Area Education Agency. With good reason such as a family illness, they may miss one (1) half-day session (approximately four total contact hours) without consequence and we will work with them individually to make up the missed content. Non-emergency absences will lead to point deduction of 10 points per ½ day and without opportunity to make up the content. Because of the short duration of the course, any missed class after the first half-day will cause them to lose attendance points at a rate of 10 points (out of the total of 40) for each ½ day. Attendance will be taken every day.

**PRE-WORKSHOP ASSIGNMENT**

Short answer essays based on three assigned readings. This assignment is designed to orient you towards the topics that will be discussed during the workshop and demonstrate level of understanding and reasoning ability of some key topics

**FINAL PROJECT**

You are expected to bring all planning material from any 1 unit you have taught in the past (or are planning to teach) that aligns with the goals of the workshop. Throughout the workshop, you will be encouraged to develop additions to your unit that address two student learning goals: 1) understanding the relationship between climate and energy, weather and energy, or climate, weather and energy, and 2) the explicit use and understanding of science models.

**WORKSHOP FOLLOW-UP**

A conference call will be scheduled for Spring 2012 to do some post-school year follow up between participants.

**CONTENT COVERED**

Time during the workshop will be distributed approximately as described in the following table.

Discussion	3 hours
Pedagogy	7 hours
Energy	5 hours
Project work time	4 hours
Field trips	6 hours
Climate	6 hours
Weather	4 hours

## **COLLEGE/UNIVERSITY POLICIES**

The College of Education policy on student complaints can be found at [https://www.education.uiowa.edu/coedean/policies/student\\_complaint/index.html](https://www.education.uiowa.edu/coedean/policies/student_complaint/index.html) and are specified in the letter from the Teaching and Learning DEO, attached to this syllabus.

The College of Education policy on student academic misconduct can be found at [https://www.education.uiowa.edu/coedean/policies/student\\_ac\\_misconduct/index.html](https://www.education.uiowa.edu/coedean/policies/student_ac_misconduct/index.html).

The University of Iowa policy on sexual harassment can be found at <http://www.sexualharassment.uiowa.edu/policy.php>.

**Respect for Diversity:** It is our intent that students from all diverse backgrounds and perspectives be well-served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength and benefit. It is our intent to present materials and activities that are respectful of diversity: gender, sexual orientation, disability, age, socioeconomic status, ethnicity, race, culture, perspective, and other background characteristics. Your suggestions about how to improve the value of diversity in this course are encouraged and appreciated.

Please let us know ways to improve the effectiveness of the course for you personally or for other students or student groups. In addition, in putting together the course schedule, we have attempted to avoid conflicts with major religious holidays. If, however, we have inadvertently scheduled an event or major deadline that creates a conflict with your religious observances, please let us know as soon as possible so that we can make other arrangements.

We will work with Student Disability Services (SDS) to provide appropriate accommodations for students with documented disabilities. Please make an appointment to discuss your personal situation if you need accommodations and/or if there is any emergency medical information of which we should be aware.