

Geography/IES 127
Physical Systems of the Environment
Spring 2011 – Syllabus

Classroom: 180 Science Hall **Lectures:** TR 11:00 am to 12:15 pm.

Instructor: Joe Mason

Office: Room 207 Science Hall; Phone: 262-6316; Email: mason@geography.wisc.edu

Office Hours: Tuesday, 9:00-10:00 AM; Wednesday, 2:30-3:30 PM, or by appointment.

Labs—See separate lab syllabus. Labs will not meet in the first week of classes.

Teaching Assistants

Leslie Sinak: Office: 401 Science Hall; Email: sinak@wisc.edu

Marty Elmer: Office: 480B Science Hall; Email: meelmer@wisc.edu

Overview of the Course

This course is an introduction to physical geography, the study of natural environmental systems, emphasizing how these systems produce local and global patterns of weather and climate, vegetation, soils, and landforms. The first objective of the course is to provide a basic understanding of the most important processes shaping the environment in which we live. The second is to convince you of the dynamic nature of that environment, and the degree to which it has changed in the past and is changing at present, in part because of human activity.

The course has separate **lecture** and **lab** components, which are coordinated so the labs provide you with a more in-depth understanding of many of the same basic concepts discussed in lecture, along with new material. The three *exams* are based on topics covered in lecture, and there are separate lab quizzes to test your understanding of lab material. The labs include indoor and field lab exercises and a field-based semester project, which are discussed in more detail in the lab syllabus. A review assignment on weather and climate is also part of the lab work; this is timed so that it should help you prepare for the lecture exam that covers the same topics.

Prerequisites

There are no prerequisites for this class, but students are expected to be geographically literate. You should know the location of the world's continents and oceans, the 50 states and major natural features like the Mississippi River or the Rocky Mountains. Google Earth will be used to illustrate some of the points made in lecture, and it would be a good idea to try this freely available program out for yourself, if you haven't already (<http://earth.google.com/>)

Optional Online Texts:

There is no required textbook. If you find that you need more background reading on lecture topics, try the following two online texts. They are both strictly optional. ***Exams will be based on lectures; use your lecture notes as a guide to the topics that will be covered on exams and the terms that I expect you to know.***

The Physical Environment: An Introduction to Physical Geography 2/e, by Michael Ritter

http://www.uwsp.edu/geo/faculty/ritter/geog101/textbook/title_page.html

Physicalgeography.net

<http://www.physicalgeography.net/>

Grading

The final course grade will be based on work in lab (30%), and three lecture exams (70% total, Exams 1 and 2 are 25% each, and Exam 3 is 20%). *You must receive a passing grade in both lecture and lab components to pass the course as a whole.* After the first exam, I will discuss the grading scale and how to assess your standing in the class at that point. The lecture exams will be in multiple-choice format and are not comprehensive. If you must be out of town for a lecture exam, please discuss this with the instructor as early as possible in the semester, or it may not be possible to schedule an alternative exam time. If you miss an exam because of an emergency or health issues, notify the instructor as soon as possible, preferably within 24 hours. Extra time for exams or other accommodations should be arranged through the McBurney Center. Extra credit is not offered. **Plagiarism in lab papers or other academic misconduct will affect your course grade and/or have other consequences.** For information on what is considered academic misconduct, and possible consequences, see <http://students.wisc.edu/saja/misconduct/UWS14.html>. This issue will also be discussed in lab.

Honors: If you are registered for honors credit, please contact your TA during the first three weeks of the semester to discuss the required project.

Lecture Schedule. *Please note:* The schedule of lecture topics is approximate and may be modified to some extent over the course of the semester. *The dates of exams are fixed.* Each exam will cover the material actually discussed in lecture on the dates listed, regardless of minor changes in lecture topics. If you have any questions about this point, please ask.

Date	Lecture Topics	<i>Optional Readings from The Physical Environment website:</i>
Tuesday 1/18, Thursday 1/20	1. Introduction to physical geography and to this course. 2. The geographic grid and map projections 3. Timescales, human and geologic 4. Minerals and Rocks	Chapters 1, 14 (sections on Minerals and Rocks only)
Tuesday 1/25, Thursday 1/27, Tuesday 2/1	1. Rock structure 2. Plate Tectonics 3. Earthquakes 4. Volcanoes	Chapter 14 (except Minerals and Rocks), 15, 16
Thursday 2/3	1. The Earth's atmosphere: Composition and structure 2. Evaporation, condensation, and latent heat	Chapters 3, 7 (section on Phase Changes of Water)
Tuesday 2/8	1. Radiation: Basic concepts 2. Earth-Sun Relations	Chapter 4
Thursday 2/10	1. Surface energy balance and air temperature. 2. Effect of greenhouse gases on temperature	Chapter 5
Tuesday 2/15	Atmospheric pressure and wind	Chapter 6 (through Local Scale Winds)
Thursday 2/17	Stability and precipitation	Chapter 7 (starting with Adiabatic Temperature Change and Stability)
Tuesday 2/22	Exam 1 (covers lectures on 1/18 through 2/17)	
Thursday 2/24	Atmospheric circulation	Chapter 6 (starting with Global Scale Circulation, ending with Wind and Pressure Aloft)
Tuesday 3/1, Thursday 3/3	Weather: Fronts, mid-latitude and tropical cyclones	Chapter 8
Tuesday 3/8	Major climates of the world	Chapter 9
Thursday 3/10, Tuesday 3/22	Global climate change and its causes, past and present	Chapter 9
Thursday 3/24	1. Introduction to the global carbon cycle 2. Energy flow in Ecosystems: Photosynthesis, respiration, decomposition	Chapter 12 (section on Energy Flow Through Ecosystems)
Tuesday 3/29, Thursday 3/31	1. Global and local patterns of vegetation.	Chapter 12 (section on Ecology of Vegetation and Plant Succession), Chapter 13
Tuesday 4/5	Exam 2 (covers lectures, 2/24 through 3/31)	
Thursday 4/7, Tuesday 4/12	1. Introduction to soils 2. Weathering and soil formation 3. Global and local patterns of soils	Chapter 11 (skip section on Soil Development Processes)
Thursday 4/14	The terrestrial carbon cycle (carbon in vegetation and soils)	
Tuesday 4/19, Thursday 4/21	1. Overview of the hydrologic cycle 2. Infiltration and runoff 3. Soil erosion	Chapter 10
Tuesday 4/26	1. Drainage basins 2. Stream channels, floods, and floodplains	Chapter 18 (skip section on Stream Gradation)
Thursday 4/28, Tuesday 5/3	1. Groundwater 2. Glaciers and Ice Age Wisconsin	Chapter 19
Thursday 5/5	Exam 3 (covers lectures on 4/7 through 5/3)	

No exam during finals week