

Geography/IES 127
Physical Systems of the Environment
Spring 2009 – 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. If you cannot make it to my office during those hours, please email me to make an appointment for some other time.

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

Teaching Assistants

Colin Belby: Office: 404 Science Hall; Phone: 262-8920; Email: csbelby@wisc.edu

Jena Krause: Office: 401 Science Hall; Phone: 262-8920; Email: akrause3@wisc.edu

Overview of the Course

This course is an introduction to *physical geography*, which is 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:

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

This site is *not* required reading, but you may find it useful in reviewing concepts covered in lecture. Please note that this site doesn't always use exactly the same terminology as I will in lecture, and is organized somewhat differently than the lecture schedule. ***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.***

If you want even more background reading, there are a number of other sources on the web, such as:

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

Grading

The final course grade will be based on three equally weighted lecture exams (70%) and work in lab (30%). You must receive a passing grade in both lecture and lab components to pass the course as a whole. 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.***

Honors

If you are registered for honors credit, please contact Colin Belby (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	Optional Readings from <i>The Physical Environment</i> website:
Tuesday 1/20, Thursday 1/22	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	Chapter EM
Tuesday 1/27, Thursday 1/29	1. Rock structure 2. Faults, earthquakes	Chapter TL
Tuesday 2/3, Thursday 2/5	1. Plate tectonics 2. Volcanoes	Chapter VL
Tuesday 2/10	1. The Earth's atmosphere: Composition and structure 2. Evaporation, condensation, and latent heat	Chapter TA, Chapter AM (section on Phase Changes of Water)
Thursday 2/12	1. Earth-sun relations 2. Energy and radiation	Chapter ER
Tuesday 2/17	1. Surface energy balance and air temperature. 2. Effect of greenhouse gases on temperature	Chapter AT
Thursday 2/19	Exam 1 (covers lectures on 1/20 through 2/17)	
Tuesday 2/24	Atmospheric pressure and wind	Chapter AC (through Local Scale Winds)
Thursday 2/26	Stability and precipitation	Chapter AM (starting with Adiabatic Temperature Change and Stability)
Tuesday 3/3	Atmospheric circulation	Chapter AC (starting with Global Scale Circulation)
Thursday 3/5	Weather: Fronts, mid-latitude and tropical cyclones	Chapter WS
Tuesday 3/10	Major climates of the world	Chapter CS
Thursday 3/12, Tuesday 3/24	Global climate change and its causes, past and present	Chapter CS
Thursday 3/26, Tuesday 3/31	1. Energy flow in Ecosystems: Photosynthesis, respiration, decomposition. 2. Introduction to the carbon cycle. 3. Carbon in terrestrial ecosystems	Chapter BE (section on Energy Flow Through Ecosystems)
Thursday 4/2	Exam 2 (covers lectures from 2/24 through 3/31)	
Tuesday 4/7, Thursday 4/9	1. Global and local patterns of vegetation. 2. Weathering	Chapter BE (starting with Ecology of Vegetation and Plant Succession); Chapter WM (section on Weathering)
Tuesday 4/14, Thursday 4/16	1. Soil formation 2. Global and local patterns of soils 3. Soils and the carbon cycle	Chapter SS (skip section on Soil Development Processes)
Tuesday 4/21, Thursday 4/23	1. Overview of the hydrologic cycle 2. Infiltration and runoff 3. Soil erosion	Chapter HY
Tuesday 4/28	1. Drainage basins 2. Stream channels, floods, and floodplains	Chapter FS (skip section on Stream Gradation)
Thursday 4/30, Tuesday 5/5	1. Groundwater 2. Glaciers and Ice Age Wisconsin	Chapter GL
Thursday 5/7	Exam 3 (covers lectures on 4/9 through 5/5)	

No exam during finals week