

Geography/Environmental Studies 127: Physical Systems of the Environment. Fall 2015 – Syllabus

Classroom: 444 Science Hall **Lectures:** TR 11:00 am to 12:15 pm.

Instructor: Joe Mason (mason@geography.wisc.edu)

Office: 222 Science Hall

Office Hours: Wednesday, 11:00AM-Noon; Thursday, 1-2 PM, or by appointment.

Labs—See separate lab syllabus. Labs will not meet until the week of September 7-11.

Teaching Assistant: Elliot Vaughan (evaughan2@wisc.edu)

Office: 401 Science Hall

Office Hours: 1:30-3 PM Monday and 9:30-10:30 AM Wednesday

Online Resources and Course Announcements

On the UW Moodle site (<http://courses.moodle.wisc.edu/>) you will find copies of the syllabus and other documents, copies of lecture slides, dropboxes for assignments, and a variety of other important resources. *All course announcements will be made through the class email list*, which uses your university email address (wisc.edu). Make sure to check that email address regularly to avoid missing anything important.

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 course has three objectives:

- To provide a basic understanding of the most important processes shaping the physical environment in which we live.
- 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.
- To provide you with important tools that you can use, with background knowledge from this course, to explore the climate, vegetation, soils and landforms of particular places and how they are changing over time.

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. We'll also take some time in lecture to discuss and answer your questions on important concepts. In addition, you will need to independently study certain topics using readings in the required textbook.

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 and explore 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/>)

Required Textbook

deBlij, H.J., Muller, P.O., Burt, J.E., and Mason, J.A. 2013. Physical Geography: The Global Environment, 4th Edition. Oxford University Press.

Assigned readings from the textbook are mainly intended to provide you with more in-depth background on lecture topics. **However, there are certain parts of the readings, clearly identified in the syllabus, that you'll need to study on your own because I won't lecture on those topics.** The quiz and the exams focus mainly on

material I do cover in lecture, but there will be several questions on each exam about the material you are assigned to study on your own. Feel free to ask about these topics and get explanations of points you don't understand, either in discussion during class or outside of class. I may also post a few short news stories related to class topics on Moodle, which I'll point out in class.

Grading

The final course grade will be based on work in lab (30%), contribution of questions for discussion in class (10%) and a quiz plus three lecture exams (60% total; exams are equally weighted and the quiz is weighted half as much as an exam). *You must receive a passing grade in lab to pass the course as a whole.* Extra credit is not offered under any circumstances.

Discussion questions. As a requirement for the course, you will need to submit at least ten questions on lecture material and readings, over the course of the semester. You can only submit one per week, and you only need to contribute questions for 10 of the 13 weeks when questions can be submitted. Questions can be intended to help understand the material for exams, or just because you want to know more about a course topic. They should be short (one or two sentences is fine) and to the point.

Each week I will pick some of the submitted questions to discuss in class (without your name attached to them), because they are good questions or because a lot of people have asked them. When we discuss questions, I'll make sure to let you know when we are going beyond the material covered on exams. There will be **a drop box on Moodle** for each week's questions, **due by 5 pm on Wednesday**, starting Wednesday, 9/9, skipping Thanksgiving week, and continuing through Wednesday 12/9.

Quiz and lecture exams. These will be in multiple-choice and short answer format, and they are **not** comprehensive. If you must be out of town for a lecture exam or the quiz, 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.

Grading scale: I start with the following scale in assigned letter grades, based on overall percentage in the course. In some semesters I lower the grade breaks slightly to account for exams that were harder than intended or other factors, but in other semesters I use this scale unchanged:

A	92-100%
AB	87-91.9%
B	80-86.9%
BC	73-79.9%
C	65-72.9%
D	55-64.9%

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	Readings from the textbook:
Thursday 9/3	1. Introduction to physical geography and to this course. 2. The geographic grid and map projections	<i>More background for lectures:</i> Unit 3, up to page 31. <i>More background for lab:</i> Unit 3, pages 34-40. <i>Study on your own:</i> Unit 1 (entire unit).
Tuesday 9/8, Thursday 9/10	1. Minerals and rocks 2. Geologic time scale 3. Structure of the Earth	<i>More background for lectures:</i> Units 28, 29, 27 (read in that order; you will <u>not</u> be tested on P and S waves and specifically how they help us determine Earth's structure).
Tuesday 9/15	Plate tectonics	<i>More background for lectures:</i> Units 30, 31
Thursday 9/17 (last 45 minutes of lecture period)	Quiz: Covers lecture material from 9/3 through 9/15, plus material covered in Units 1 of the book.	
Thursday 9/17 (first 25 minutes of lecture), Tuesday 9/22	Faults, folds, and earthquakes Note: Volcanoes are <u>not</u> covered in lecture but you will need to know material on them covered in Unit 32 of the book and <u>bring up any questions</u> you have before the exam on 10/13	<i>More background for lecture:</i> Units 33. <i>Study on your own:</i> Unit 32 (entire unit)
Tuesday 9/22 (later part of lecture), Thursday 9/24	2. Earth-Sun relationships 3. Radiation and heat balance	<i>More background for lecture:</i> Units 4 and 5.
Tuesday 9/29	Composition of the atmosphere (make sure to also read the material in Unit 6 on ozone, particulates, and the layered structure of the atmosphere, not covered in lecture).	<i>More background for lectures:</i> Unit 6 (<u>except</u> sections listed below as “study on your own”). <u>Also read</u> the short section on Physical Properties of Water (Unit 11, page 129) <i>Study on your own:</i> Unit 6, sections on Ozone, Methane, Other Gases, and Particulates (p. 74-75), and Focus on the Science Box, p. 69-70
Thursday, 10/1	Temperatures of the lower atmosphere	<i>More background for lecture:</i> Unit 7
Tuesday, 10/6	Atmospheric pressure and winds	<i>More background for lecture:</i> Unit 8, <u>except</u> Small-Scale Wind Systems, page 99.

Thursday 10/8	Atmospheric Moisture	<i>More background for lecture:</i> Unit 11
Tuesday 10/13	Exam 1 (covers lectures and assigned reading material to study on your own, 9/17 through 10/8)	
Thursday 10/15	Air Masses and Precipitation (online lecture , no class during regular lecture period)	<i>More background for lecture:</i> Unit 12 (we won't discuss fronts and frontal precipitation [pages 145-146] until later)
Tuesday 10/20	Guest lecture, topic TBA	
Thursday 10/22	Circulation of the atmosphere	<i>More background for lecture:</i> Unit 9
Tuesday, 10/27	Weather systems	<i>More background for lecture:</i> Unit 13
Thursday 10/29	Global climates	No reading
Tuesday 11/3, Thursday 11/5	1. Global Warming and Human Impacts on Climate 2. The Carbon Cycle Note: You are also responsible for the material on past climate change in the textbook (Unit 18). I will give you more specific guidelines on what to focus on in that unit.	<i>More background for lectures:</i> Units 19 and 20 (pages 250-251 <u>only</u>) <i>Study on your own:</i> Unit 18
Tuesday 11/10	Exam 2 (covers lectures and assigned reading material to study on your own, 10/15 through 11/5)	
Thursday 11/12	1. Ecosystem processes 2. Basic concepts of biogeography	<i>More background for lecture:</i> Unit 24
Thursday 11/19, Tuesday 11/24	1. Weathering 2. Processes of Soil Formation Note: You are also responsible for the material on <u>classification of soils</u> in Unit 23	<i>More background for lectures:</i> Units 36 and 21 <i>Study on your own:</i> Unit 23
Tuesday 12/1, Thursday 12/3	1. Water flow in streams 2. Drainage basins, infiltration and runoff, soil erosion Note: You are also responsible for the material on <u>groundwater</u> in the later part Unit 38	<i>More background for lectures:</i> Unit 38 (up to start of section on Water Beneath the Surface on page 438) and Unit 39 <i>Study on your own:</i> Unit 38, section on Water Beneath the Surface (pages 438-443)
Tuesday 12/8	Landforms of the fluvial system	<i>More background for lecture:</i> Unit 41
Thursday 12/10	Glaciers and Ice Age Wisconsin	<i>More background for lecture:</i> Units 43 and 44
Tuesday 12/15	Exam 3 (covers lectures and assigned reading material to study on your own, 11/12 through 12/10)	

No exam during finals week