

Geography/Environmental Studies 127: Physical Systems of the Environment. Fall 2018 – Syllabus

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

Instructor: Joe Mason, mason@geography.wisc.edu, 608 262 8112 (office)

Office: Room M394 Science Hall (Reached by stairs or elevator from the south end of 3rd floor. To find the elevator go through the door to the State Cartographers Office, and look around the corner to the left; please call or email me if you need help finding or operating it)

Office Hours: Wednesday, 1-2PM; Thursday, 10-11AM, or by appointment.

Labs—See separate lab syllabus. Labs will not meet until the week of September 10-14.

Teaching Assistant: Yi Wang, ywang966@wisc.edu

Office: 409 Science Hall

Office Hours: Monday, 10 – 12PM

Online Resources and Course Announcements

On your course dashboard (<https://canvas.wisc.edu/>) you should find a link to the Canvas home page for Geog/EnvirSt 127, where you can find copies of the syllabus and other documents, information on labs, 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 natural environmental systems, emphasizing the interconnections between the systems of the solid earth (minerals, rocks, soils), the hydrosphere (water in all its forms), the biosphere, and the atmosphere. This subject matter has traditionally been referred to as **physical geography**, but more recently it has also been described as **earth system science**.

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 lecture periods won't just involve actual lectures, instead, we will spend some time each week discussing **case studies** and current events that relate to course material. The **labs** include indoor and field lab exercises and a field-based semester project, which are discussed in more detail in the separate **lab syllabus**.

Learning outcomes

Through this course, students will:

- Understand and be able to explain at a basic level the most important processes of the Earth system, including formation and weathering of minerals, soil development and erosion, atmospheric circulation, and the global cycles of water and carbon
- Be able to use concepts from this course to understand environmental issues such as global climate change and the sustainability of agriculture, and natural hazards such as earthquakes and floods, and also to make informed contributions to public debate and decision-making on how to address these issues and hazard.
- Through case studies and labs, become aware of important research methods that are the basis of modern Earth system science

Credits for this course: This is a five credit course. The credit standard for this course is met by the expectation of at least 225 hours of student engagement in learning activities, including two 75-minute lectures per week, labs, independent work on semester lab projects, reading, and other required work described in the course syllabus.

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

Mason, J.A., Burt, J.E., Muller, P.O., and deBlij, H.J. 2016. *Physical Geography: The Global Environment*, 5th Edition. Oxford University Press.

Many of the assigned readings are intended to help you understand topics I cover in lecture. However there are some readings, **clearly identified in the syllabus**, that you'll need to **study on your own** because I won't lecture on those topics. The exams focus primarily on material I do cover in lecture, but there will be questions on each exam about the readings labeled "study on your own." Feel free to ask about these topics and get explanations of points you don't understand, either during or outside of class.

Grading

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

As a requirement for the course, you will need to submit at least ten **questions you have about the case studies we discuss in class**, over the course of the semester. We will discuss a case study each week except for the first and last weeks of the semester (the Thanksgiving week case study will be an article or website that you can look at outside of class, available by the start of the week). You will need to think about the case study and submit a question to a **dropbox on Canvas by midnight of the next day**. Through the semester, **you only need to submit ten questions for full credit**, so you can skip two weeks without losing points. The questions only need to be one or two sentences long, but do need to show some thought about the material. Each week I will pick four or five of the most interesting questions and post answers to them on Canvas. The case studies and examples may be covered on exams, or you may be given questions involving similar examples that you will need to answer using basic concepts covered in class. Therefore, when you submit your questions on what we've discussed, you can use them as a way to prepare for exams. However, you can also feel free to ask questions just because you're curious about something we discussed.

The **lecture exams** 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, please discuss this with me 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.

Accommodations such as extra time during exams, note-taking, etc. should be arranged through the **McBurney Center**: <http://www.mcburney.wisc.edu/>. If you are having any kind of difficulty with the class because of your personal situation and are uncomfortable discussing this with the instructor or TA, **please** talk to the staff at the Dean of Students Office or L&S Advising and Academic Affairs, who are very supportive and trained to help with situations like this. See the last page for more info on those offices.

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	93-100%
AB	87-92.9%
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 9/6	1. Introduction to physical geography and to this course. 2. The geographic grid and map projections	More background for lectures: Unit 3, up to page 32. More background for lab: Unit 3, pages 34-40. Study on your own: Unit 1 (entire unit).
Tuesday 9/11 (may start these topics on 9/6)	1. Minerals and rocks 2. Geologic time scale	More background for lectures: Units 27 and 28
Thursday 9/13, Tuesday 9/18	Structure of the Earth, plate tectonics, folds, faults, and earthquakes Note: Volcanoes are <u>not</u> covered in lecture but you will need to know material on them covered in the book and <u>bring up any questions</u> you have before the exam on 10/10	More background for lectures: Units 29 (you will <u>not</u> be tested on P and S waves and specifically how they help us determined Earth's structure), 30, 31, 33 Study on your own: Unit 32 (entire unit)
Thursday 9/20	1. Weathering 2. Processes of Soil Formation Note: You are also responsible for the material on <u>classification of soils</u> in Unit 23	More background for lectures: Units 36 and 21 Study on your own: Unit 23
Tuesday 9/25	Guest Lecture: TBA	Background reading may be announced later
Thursday 9/27	Background on climate: Basic definition and important climatic regions of the world	No readings
Tuesday 10/2	1. The hydrologic cycle 2. Mass movements	More background for lectures: Unit
Thursday 10/4	1. Water flow in streams 2. Drainage basins, infiltration and runoff, soil erosion	37 More background for lectures: Unit 38 (up to start of section on Water Beneath the Surface on page 464) and Unit 39
Tuesday 10/9	Exam 1 (covers lectures and assigned reading material to study on your own, 9/6 through 10/4)	
Thursday 10/11	Landforms of the fluvial system.	More background for lecture: Unit 41
Tuesday 10/16	Glacial processes and landforms	More background for lecture: Units 43 and 44
Thursday 10/18, Tuesday 10/23	Ecosystem processes, basic concepts of biogeography. Note: You are also	More background for lecture: Units 24 and 26.

	responsible for the material on <u>global distribution of plants</u> in Unit 25 (including the concept of <u>biomes</u>)	<i>Study on your own:</i> Unit 25
Thursday 10/25	The carbon cycle	<i>More background for lecture:</i> Unit 20 (up to the start of the section on the global nitrogen cycle, on page 265). We will also briefly discuss the concepts covered in Focus on the Science, page 233.
Tuesday 10/30	Earth-Sun relationships	<i>More background for lecture:</i> Unit 4
Thursday, 11/1	Radiation and heat balance	<i>More background for lecture:</i> Unit 5
Tuesday 11/6	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 lecture:</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 135) <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 11/8	Exam 2 (covers lectures and assigned reading material to study on your own, 10/11 through 11/6)	
Tuesday 11/13, Thursday 11/15,	1. Temperatures of the lower atmosphere 3. Atmospheric moisture and precipitation	<i>More background for lecture:</i> Unit 7, 11, 12 (we won’t discuss fronts and frontal precipitation [pages 153-155] until later)
Tuesday 11/20, Tuesday 11/27	1. Atmospheric pressure and winds 2. Circulation of the atmosphere	<i>More background for lecture:</i> Unit 8 (<u>except</u> Small-Scale Wind Systems, page 103-107), Unit 9
Thursday 11/29	Weather systems	<i>More background for lecture:</i> Unit 13
Tuesday 12/4, Thursday, 12/6	Global climate change and human impacts on the atmospheric system	<i>More background for lectures:</i> Unit 19 <i>Study on your own:</i> Unit 18, up to page 235 only
Tuesday 12/11	Exam 3 (covers lectures and assigned reading material to study on your own, 11/13 through 12/6)	

No exam during finals week

ADDITIONAL RESOURCES FOR STUDENTS:

College is a time of intellectual and personal growth, and can be stressful. Big things happen. Please let us know if we can help you access resources on campus to make your learning experience at UW more productive, establish additional academic accommodations, or help you through any rough spots.

Joel Gruley, Geography Undergraduate Advisor. If you like 127 and would like to take more courses in this area, Joel is available to help recommend courses that build on 127, provide information about Geography or related majors, and give advice about Geography-related career directions. jgruley@wisc.edu

Dean of Students Office can help with a wide variety of academic or personal concerns that affect your life as a student: <https://doso.students.wisc.edu/student-assistance/> or come to their Drop-in Hours in 70 Bascom Hall: Fall and Spring Semesters: Monday-Friday: 8:30 a.m.-4:00 p.m., Winter Break and Summer: Monday-Friday, 8:30-11:30 a.m. and 1:00-4:00 p.m.

McBurney Disability Resource Center. Provides services for an inclusive and accessible education. If you need accommodations, please talk to one of the instructors early in the semester or as soon as possible so we can plan to help you. <http://www.mcburney.wisc.edu/>

Multicultural Student Center. Provides resources, advocacy and community particularly for students of color and historically underrepresented and underserved students on campus. <https://msc.wisc.edu>

GUTS (Greater University Tutoring Service). Contact to request tutors to help you with course material. <http://www.guts.wisc.edu/> The instructors or TAs also may know students offering tutoring.

UW Writing Center. Provides drop-in or scheduled appointments for help. They will help with just about any type of writing assignments/needs. <http://www.writing.wisc.edu/>

L&S Student and Academic Affairs. Contact for student advising and help with accommodations for health issues or other emergencies that may affect your ability to complete coursework. <http://saa.ls.wisc.edu>

Students facing food and/or housing insecurity are urged to contact the Dean of Students Office for support: <https://doso.students.wisc.edu/student-assistance/>

UW also has a Student Food Pantry: <https://www.asm.wisc.edu/theopenseat/>