

## ENVS 101-501 Fall 2015 – Environmental Science: The Blue Planet

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**Office hours:** Tuesdays 9:00-11:00am, and Tuesdays and Thursdays 3:00-4:00pm, or by appointment

**STEM Center hours:** Mondays and Wednesdays 1:30-3:30pm

**Classroom:** This class will meet Tuesday and Thursday each week from 1:30-2:45pm in **room C103**

**Textbook:** Elemental Geosystems 7<sup>th</sup> Edition (2012), R.W. Christopherson; Publisher: Prentice-Hall

**Supplies you'll need:** Notebook or file-folder containing lined paper; pens and/or pencils

**Optional Supplies:** Colored pens/pencils; calculator; ruler; eraser

### Schedule

Week	Date		Lecture Topic	Textbook Reading	Quiz
1	Aug. 18	Intro- duction	Course outline; The Concept of the Commons	G. Hardin (1968)	-
	Aug. 20		The Scientific Method; Systems	Pages 1-13	#01
2	Aug. 25	THE GEOSPHERE	Hypotheses on Earth's Origin and Structure	Pg. 256-262	-
	Aug. 27		The Tectonic Cycle	Pg. 269-281	#02
3	Sep. 1		Tectonics and Landforms	Pg. 269-281	-
	Sep. 3		The Rock Cycle	Pg. 262-268	#03
4	Sep. 8		Geosphere as a Commons: Minerals and Ores	"Rare Earth"	-
	Sep. 10		Geosphere as a Commons: Fossil Energy	TBA	#04
5	Sep. 15		<b>*** TEST 1 *** Covers everything so far</b>	Review your notes	-
	Sep. 17	THE HYDROSPHERE	The Hydrologic Cycle; Surface water	182-185; 346-366	#05
6	Sep. 22		Systems: Rivers, Dams and Eutrophication	352-355; 367-371	-
	Sep. 24		Groundwater Concepts	200-206	#06
7	Sep. 29		Systems: Groundwater Contamination (!)	376-378	-
	Oct. 1		The Oceans	111-114; 126-128	#07
8	Oct. 6	THE HYDROSPHERE	The Cryosphere	410-416; 432-433	#08
	Oct. 8		<b>NO LECTURE – FALL BREAK</b>	Review your notes	-
9	Oct. 13		<b>Water Commons – Student Presentations</b>	None	-
	Oct. 15		<b>*** TEST 2 *** Covers everything since Test 1</b>	None	-
10	Oct. 20	THE ATMOSPHERE	Introduction to the atmosphere	38-44; 49-55; 71-80	#09
	Oct. 22		The Weather (part 1): What causes it?	106-114; 144-160	#10
11	Oct. 27		The Weather (part 2): Extreme weather (!)	161-176	-
	Oct. 29		Seasons and Climates	44-9; 216-9; 235-240	#11
12	Nov. 3		Climate and Change	240-8; 129-31; 190-2	-
	Nov. 5	THE ATMOSPHERE	Atmosphere as a Commons: Ozone	56-57	#12
13	Nov. 10		SMOG: Discussion of reading (!)	Posted on Learn	-
	Nov. 12		<b>*** TEST 3 *** Covers everything since Test 2</b>	Review your notes	-
14	Nov. 17	THE BIOSPHERE	Nutrients and Biogeochemical Cycling (!)	474-480; 485-489	#13
	Nov. 19		Populations and Ecosystems part 1	None	-
15	Nov. 24		Populations and Ecosystems part 2 (!)	480-489	#14
	Nov. 26		<b>NO LECTURE – THANKSGIVING BREAK</b>	None	-
16	Dec. 1		Biomes (!)	504-506; 519-520	#15
	Dec. 3	THE BIOSPHERE	The Commons: Ecosystem Services or Phenology	None	-
17	Dec. 8		<b>Review Session (if there is interest)</b>	None	-
	Dec. 10		<b>*** TEST 4 *** Covers everything since Test 3</b>	Review your notes	-

(!) = On these days there will almost certainly be an in-class activity that counts toward your final grade in the class. **Note:** there could be graded in-class activities on any other day also.

## Course Goals:

1. *To introduce the principles and process of science using environmental study as an aide*  
It behooves us to learn how to use the scientific method in our everyday thinking, and to learn how scientists use this method to assign levels of confidence to their findings.
2. *To present Earth system processes and products and the methods by which they are studied*  
The Earth system consists of interactions between, in the broadest sense, the solid earth, water, the atmosphere and living organisms, where each interaction yields a product that forms part of a cycle. In addition we will investigate how we know what we know about the environment; how well we understand our environment; and what we are able to observe and measure. This will be accomplished through a series of lectures, hands-on experiences and a fieldtrip.
3. *To give each student a better appreciation of the world around them, and how it affects their lives and the lives of others*  
If nothing else I hope that you come away from this course with a closer connection to your environment: have a better understanding of the pros and cons of various energy resources, be knowledgeable about the weather, be aware of delicate balances within ecosystems and the benefits of biodiversity, and ultimately be able to make educated decisions on topical subjects such as climate change.

## Student Learning Objectives (SLOs):

1. By evaluating a set of data, the student will define a problem, pose a hypothesis, and describe how the hypothesis can be tested.  
(Relates to UNM/HED Area 3, Competencies 1, 2, 4)
2. Students will be able to describe what a commons is (providing examples from the geosphere, atmosphere, hydrosphere, and biosphere) and how it should be managed.  
(Relates to UNM/HED Area 3, Competency 3)
3. Students will be able to describe the atmospheric, hydrologic, geologic, and biologic processes involved in formation of significant resources (fossil fuels, metals, soils, water, stratospheric ozone).  
(Relates to UNM/HED Area 3, Competencies 3, 5)
4. Students will be able to name and describe the reservoirs and fluxes of various natural cycles (rock cycle, hydrologic cycle, carbon cycle) and evaluate how natural and anthropogenic processes and activities can change the sizes of both reservoirs and fluxes.  
(Relates to UNM/HED Area 3, Competency 3, 5)
5. Students will be able to name and describe the common features found on a weather “surface map”, and interpret wind directions, positions of warm and cold air masses, and locations most likely to receive precipitation.  
(Relates to UNM/HED Area 3, Competency 1, 2, 4)
6. Students will be able to describe the necessary constituent parts of an ecosystem and hypothesize how interactions between these parts will regulate population sizes of individual species.  
(Relates to UNM/HED Area 3, Competency 1, 3)

### Attendance & Drop Policy:

Data I have gathered shows that “good attendance” is *necessary* for successful completion of the class. This is because I cover material not in the book and because I conduct a lot of in-class assignments. Therefore I strongly encourage you to be present. If you miss 2 or more classes during the first two weeks of the semester, without good reason, you will be dropped from the class. Beyond that, poor attendance and lack of class participation are grounds for you being dropped.

### Grading:

Your final grade will be calculated from your performance on the following assessments:

Tests: 4 Tests worth 20 percent each	80 %
<i>Minus your lowest Test score</i>	<i>-20 %</i>
In-Class and Homework Assignments	25 %
Online Quizzes: 15 quizzes worth 1 percent each	<u>15 %</u>
Total	<u>100 %</u>

Grades & Scores: A+ (>96%), A (92-95.9%), A- (88-91.9%), B+ (85-87.9%), B (82-84.9%), B- (78-81.9%), C+ (75-77.9%), C (72-74.9%), C- (68-71.9%), D+ (65-67.9%), D (62-64.9%), D- (60-61.9%) and F (0-59.9%)

*Note that you need a C grade (72%) or better to get science credit for this class.*

### Tests:

Tests cover all materials assigned since the previous test. Each test is worth 20%. I will drop the lowest of your four test scores when calculating your final grade. All of the tests contain short-answer and multiple-choice questions as well as interpretation of diagrams. You may bring one 8.5 x 11 inch page of notes to each test. Anything that you can fit on the page is ok. Bear in mind that you will be tested on your understanding of concepts and how to apply them as well as your ability to memorize facts. On each test I offer “extra credit” questions, but I limit the maximum score on each test to 100%. The questions are there so you don’t lose valuable points for making silly mistakes on other questions.

### In-Class & Homework Assignments:

A total of 25% of your grade in this class will be based on short in-class assignments, some of which may need to be completed outside of class time (i.e. as homework), and regular homeworks. These assignments will not all be worth the same percentage of your final grade. The value of each will be stated when they are assigned. **Homeworks are due in class.**

#### Late Assignments:

- Turned in within 24hrs of due date: will be docked 25% of the achieved grade
- Turned in more than 24hrs after due date: will be docked 50% of the achieved grade

You may **resubmit homework as many times as you wish** (even if it was turned in late the first time) to **earn 50% credit** on all corrections.

### Online Quizzes:

You will be assigned 15 short, web-quizzes (posted on Blackboard Learn) during the semester. Each is worth 1% of your final grade. Quiz questions will be based on material done in class and the required reading. Quizzes will be posted to Blackboard Learn after the class they are assigned (see topic schedule on page 1 for days when quizzes will be assigned), and the deadline for completing each quiz will be immediately before the start of the next class (1:29pm).

### Reading:

Suggested reading from the textbook is given in on page 1. There are several lectures for which no part of the textbook provides sufficient background material. In these cases I will post on Blackboard Learn articles for you to read. The most effective way to gain material from the assigned reading is to go through it before each class takes place. This will allow you to bring questions to class and ultimately provide you with a much better understanding of the material. Re-reading after lecture will then help you cement a lot of the concepts in your mind and provide you with a solid grasp of the subject

material. I should also add that each of the 15 quizzes this semester will use book content as well as lecture content, so to get good scores on the quizzes you will want to **read the book**.

### Fieldtrips:

There will be opportunities during the semester to attend optional fieldtrips. While the full list has not yet been compiled the following locations will be visited (dates to be determined):

- 1) Southside Water Reclamation Plant - <http://www.abcwua.org/content/view/91/80/>
- 2) Whitfield Wildlife Conservation Area - <http://www.whitfieldwildlife.org/>

Depending on time and interest I am willing to help you should you wish to start an Earth and Environmental Science club that undertakes additional fieldtrips.

### Lectures and Note-Taking:

It is my policy to post all lecture materials (e.g. PowerPoint slides, assignments, reading) to the ENVS101 Blackboard learn site *before* class. This is done for several reasons. First, by posting all lecture material online you can review it at any time (such as before tests and when you are taking quizzes). Second, you can bring a laptop or tablet to class and follow along electronically and be able to type notes. Third, you have the ability to print out the lecture slides and bring them to class. Many students have found that doing this helps them take better notes in class. Fourth, you can begin assignments before I hand them out in class giving you extra time to complete them.

☞ **NOTE:** If you choose to print out the lecture slides, particularly if using a printing facility on campus, please consider the environment first (and the financial cost too). Print double-sided, and print multiple slides (e.g. 3-8) per side of paper (this is an option in the Print menu – ask me to show you if you need). You may also be able to identify redundant slides that do not require printing (e.g. the title slide is often not worth printing, as are slides that contain animations or video links).

### Office Hours:

Please **do not be afraid** to come and talk to me about issues relating to this class. That is what my office hours (see top of page 1) are for. I can help you with: accessing the online (Blackboard Learn) portion of the course; interpreting the many scientific terms that you may read in the book or hear in lecture; troubling homework assignments; and many other things. I will also be available via e-mail and phone (see top of first page) to answer your questions.

### Plagiarism/Cheating:

I encourage you to talk with one another about assignments before, and while, you do them, but all submitted work must be your own. In addition if you copy information from textbooks, newspapers, the internet or other media sources you must cite them as your source of information. Blatant copying (plagiarism) will result in a score of zero for all students involved. A second offense will result in you receiving an F for this course. I would like to draw your attention to:

The University of New Mexico's policy on "Dishonesty in Academic Matters":

*"Each student is expected to maintain the highest standards of honesty and integrity in academic and professional matters. The University reserves the right to take disciplinary action, including dismissal, against any student who is found responsible for academic dishonesty.*

*Academic responsibility includes, but is not limited to, dishonesty in quizzes, tests or assignments; claiming credit for work not done or done by others; hindering the academic work of other students; and misrepresenting academic or professional qualifications within or outside the University".*

### Access:

If you have a documented learning disability, please provide a copy of your letter from **Equal Access Services** as soon as possible to ensure that your accommodations are provided for in a timely manner.

### Electronic Devices:

To the benefit of you, your classmates and the learning environment **please turn off** electronic devices such as cell phones before class begins. If you wish to use a **laptop or tablet** for note-taking **please press mute** to eliminate distracting noises. Your cooperation in these matters is appreciated by all.