

Environmental Science

Environmental Studies 260, fall 2013

M. Elsbeth McPhee

Course description

This is a core course that will provide an overview of: 1) scientific principles on which studies of the environment are based; 2) current understandings of environmental problems from a scientific perspective; and 3) evaluation of scientific evidence.

This course will be an intensive survey of a broad range of scientific disciplines. There will be a fair amount of required reading as well as quantitative work. A couple of the disciplines we'll cover, such as population biology, are mathematical in nature. (I am here to help – so don't let that scare you!)

Specific course objectives

1. Gain a rigorous foundation in various scientific disciplines as they apply to environmental science, such as ecology, evolutionary biology, hydrology, and human behavior.
2. Provide a forum for discussion of current issues in environmental science.
3. Provide each student with a set of tools to use in applied situations such as careers that may involve environmental problems and/or issues.

Instructor/class information

Instructor

M. Elsbeth (Misty) McPhee

mcpheem@uwosh.edu

424-0644

office hours:

Tues 11:00 am – 1:00 pm

Fri 11:30 – 12:30 pm

If these don't work for you, I'm happy to set up an appointment at a more convenient time. Through Google, all students have access to my calendar and I request that you look at it BEFORE contacting me about an appointment.

office: 3448 Sage

Class

Meeting times/locations:

Monday, Wednesday, Friday

9:10 – 10:10 am

Sage 3224

Texts & Materials

Optional: Houtman, Anne, Susan Karr, Jeneen Interlandi. 2013.

Environmental Science for a Changing World. W.H. Freeman, New York.

This is available as an e-Book, a hard cover, or as loose leaf.

Other readings as listed in the syllabus; posted on D2L.

Grading

Your grades will be based on four things (explanations below):

1. Class participation	100
2. Quizzes (10 pts each)	100
3. Nine exercise/discussion assignments (20 pts each)	180
4. <u>Three exams (100 pts each)</u>	<u>300</u>

Total points: 680

To figure your grade at any point throughout the term, add the total points earned and divide by the total points possible up to that point. Attendance is expected and that, with participation, can raise a borderline grade.

<u>% of total points</u>	<u>Grade</u>	<u>% of total points</u>	<u>Grade</u>
94-100	A	73-76	C
90-93	A-	70-72	C-
87-89	B+	67-69	D+
83-86	B	63-66	D
80-82	B-	60-62	D-
77-79	C+	≤ 59	F

1. **Class participation** will be graded based on attendance and overall participation and engagement in the course. Obvious signs of engagement are questions and participation in discussion; other signs are coming to talk to me in office hours or before/after class; and finally, just general attitude and attendance in the classroom.

Participation grades will be given as follows:

- A = participates often and meaningfully
- A- = participates a fair amount
- B = participates some
- B- = participates rarely
- C = in class but doesn't participate
- D = in class but not paying attention at all (sleeping, on computer)

You will lose points for each class missed.

2. I will frequently give a short **quiz** at the beginning of class. These will always be on material from the most recent lectures, so I strongly recommend you go over your notes immediately after each class and immediately prior to the following class.

Quizzes can NOT be made up under any circumstances.

3. There will be nine **assignments** due throughout the semester. Six will be written responses to assigned readings and one will be a response to a movie.

- For **EACH** of the assigned readings and movie, you will answer the following questions:
 - a. What is the main question addressed by the author(s)?
 - b. What were their primary findings?
 - c. What was the significance of findings? i.e., why do you think their work was important?
 - d. How is the reading relevant to our class?
 - e. What is a question that came up for you that you'd like the class to discuss? (see below for a description of discussion questions)

- You will also write a short paragraph that sums up your response to the entire section. This will include a discussion question that focuses on the topic as a whole, not just a single reading.
- Discussion questions are big-picture questions that foster discussion (NOT questions about details of the readings). For example, do not ask, “How many bushels of corn were harvested in 2004?” but, “What implications does the increase in corn production have on family farms?”
- These responses do not have to be formatted like a formal paper. Feel free to use subheadings and bullets to make it clear that you’ve addressed all required pieces.
- They will be graded based on how obvious it is to me that you read the assignment carefully. Thus, I recommend you be thorough and refer to the papers in detail.
- Ultimately, the responses are just that – your *response* to the reading. Tell me what you think, how it relates to what we’ve talked about in class, etc. A great reading response addresses **every** assigned reading but doesn’t just regurgitate what it said – it actually shows that you have thought about the topic.
- Though this is not a formal paper, **you must provide a bibliography and correctly cite the papers** you read and any other sources you used to formulate your ideas. For example, in text, you will cite a paper in this way (Smith et al. 2008). At the end of the paper, please use the following format:

Smith, M., P. Jones, and S. Johnson. 2008. Effects on toxins on behavior in children. *Ecotoxicology* 25:54-58.

If you have any questions, please ask me.

- Your responses are due **before** the start of class via the dropbox in D2L.
- Please turn in documents as **PDFs**. I can NOT open .wps documents – any document that I can’t open will be disregarded.
 - **If your document isn't a pdf or isn't double spaced, you won't receive any feedback – you'll just receive a grade.**

- If you are late and the dropbox is closed, put your assignment in the "Late assignments" dropbox. **I WILL NOT ACCEPT ANY ASSIGNMENT VIA EMAIL – EVER.** If it goes into the late dropbox, I don't guarantee it will get graded before the end of the term. Do not complain about timing – if you were late, I have no obligation to be timely. All late submissions are subject to a 10 - 20% penalty and will appear as a 0 until I grade it.

4. There will be three **exams**. I will hold a 1-hour review session in Sage 3221 for each exam on the following dates:

Sunday, 6 October, 4:00 pm
 Wednesday 6 November, 5:00 pm
 Wednesday, 11 December, 5:00 pm

Mark your calendars and try to keep these times open. I understand, however, that some of you will have commitments that you can't change. In that case, please plan to come by my office during office hours or arrange another time for us to go over any questions you might have. *But arrange this in advance!*

All of the assigned reading is fair game for the exams. It is not evenly distributed throughout the semester, however, (i.e., there are some light days and some heavy days) so I suggest you get ahead on light days so the heavy days aren't so bad.

- If you miss an exam due to a University-sponsored activity (e.g. athletics contest), you will know ahead of time and your coach will have provided you with a letter. Bring a copy of that letter to me ahead of time, to permit a make-up to be arranged.
- If you miss an exam for any other University-accepted reason, provide me with written proof and I'll arrange a make-up.
- **Absolutely NO** late exams will be scheduled for reasons of holiday or end-of-term travel.

5. Extra credit. One thing I highly encourage is participation in campus events and lectures. If you attend an event or lecture that is relevant to our discussions in ES 260, I will give you 5-10 points if you write up a one-page description of the event. A basic description will yield 5 points; a well-written description with a critique and discussion of how the topic fit into ES 260 will yield 10 points. Note: these points will not show up on D2L as I won't grade them until the end of the term.

Miscellaneous – but *important* – comments

1. Cell phone use will NOT be permitted in my classroom. If your cell phone goes off or you text during class, you will be asked to leave and you will receive an F for that day's participation.
2. Laptops: you are more than welcome to use laptops in class to take notes, but you are NOT to use them for any other purpose. If I see you using your laptop for anything other than note-taking, I will ask you to close your computer and you will receive an F for that day's participation.
3. The University uses the Google mail system which includes Google Calendar. This is what I use to manage my schedule. All students have access to my calendar and I request that you look at it BEFORE contacting me about an appointment. I love it when students come see me, but organizing meetings is much easier if you look at my calendar first.
4. I will NOT tolerate emails or assignments written in shorthand – if you send me anything in shorthand I will consider it unreadable and thus, won't read it. If it is a graded assignment, you will receive a 0 until you hand in a legitimate version (at which point penalties for handing in the work late will apply).
5. If you must print something (versus putting it in D2L), I consider documents printed on both sides of a sheet of paper, or even printed on scratch paper, to be perfectly acceptable! Let's try to keep our resource use down.
6. The syllabus is a general guideline – we might go slower or faster depending on interest and engagement on various topics. Feel free to give feedback on the speed of the class!
7. **STUDENTS WITH DISABILITIES ARE WELCOME IN THIS COURSE.** Please contact your me in the first week of class so that we may arrange all possible accommodation ahead of time.
8. If you need me to sign a form for any reason, do not come to be just before class or right after class. Please come to my office hours instead.
9. **EMAIL COMMUNICATION and D2L** will be used frequently throughout the semester to communicate between Instructors and Students. Emails

constitute legal, official University communication. Not checking your email is not an excuse for performance problems in the class. Contact Academic Computing or any Campus Computer Lab supervisor for assistance with email and D2L.

10. **ACADEMIC HONESTY** policies are clearly defined at this University and all students are expected to abide by them. Penalties for violations are severe in this course. Cheating on an exam (including looking at someone else's paper) at a MINIMUM leads to zero on that exam, with no opportunity for a make-up or extra credit. A second offense is an F in the course and a report to Dean of Students.

Proposed lecture and assignment schedule

Lecture	Date	Topic	Assignments due
<u>1. Introduction, Human populations and human behavior</u>			
1.1	Wed, 4 Sept	Intro: What is environmental science? Sustainability?	<u>Text</u> : Houtman et al. Chpt 1
1.2	Fri, 6 Sept	Syllabus, Human populations	<u>Text</u> : Houtman et al., Chpt 4
1.3	Mon, 9 Sept	Human behavior 1	<u>Text</u> : Houtman et al., Chpt 5
1.4	Wed, 11 Sept	Human behavior 2	
1.5	Fri, 13 Sept	<i>Discussion of journal articles</i>	<u>Read</u> : Low 2004 <u>Read</u> : Daily & Ehrlich 1992 Due: Reading Response to Low; Daily & Ehrlich Due: Ecological Footprint
<u>2. Biodiversity and extinctions</u>			
2.1	Mon, 16 Sept	Biodiversity	<u>Text</u> : Houtman et al., Chpts 6, 8, & 9
2.2	Wed, 18 Sept	Extinction 1	<u>Text</u> : Houtman et al., Chpt10
2.3	Fri, 20 Sept	Extinction 2	
<u>3. Asking questions and making predictions</u>			
3.1	Mon, 23 Sept	Hypotheses and predictions	<u>Read</u> : Schick and Vaughan pp 162-182 <u>Read</u> : Barnard 1
3.2	Wed, 25 Sept	Inference and descriptive statistics	<u>Read</u> : Barnard 2 <u>Text</u> : Houtman et al., Appendices 2, 3
3.3	Fri, 27 Sept	<i>Statistics exercises</i>	<u>Read</u> : Sparks-Jackson & Silverman 2010 <i>You must read this before class, but don't answer questions yet.</i>

<u>4. Population biology</u>			
4.1	Mon, 30 Sept	Demography, population growth	Due: Statistics exercise <i>No late assignments accepted</i> Text: Houtman et al., Chpt 7
4.2	Wed, 2 Oct	Small populations 1	
4.3	Fri, 4 Oct	Small populations 2, metapopulations <i>Discussion journal articles</i>	Read: Webb et al. 2002 Read: Ferrer et al. 2009 Due: Reading Response to Webb et al. and Ferrer et al.
	Mon, 7 Oct	EXAM 1	
<u>5. Population genetics</u>			
5.1	Wed, 9 Oct	Conservation genetics, inbreeding	Read: Cons genetics, pp 23-39, 72-86
5.2	Fri, 11 Oct	Hardy-Weinberg equilibrium	Read: Cons genetics pp 72-86
5.3	Mon, 14 Oct	Genetic drift, effective population size	Read: Cons genetics pp 175-179, 189-191
5.4	Wed, 16 Oct	<i>Genetics exercise</i>	Read: Kolbe 2010 <i>You must read this before class, and come to class with questions 1-3 answered!</i>
<u>6. Animal behavior</u>			
6.1	Fri, 18 Oct	Invasive species, ecological and evolutionary traps	Read: Schleapfer 2002 Read: Schleapfer 2005 Due: Genetics exercise <i>No late assignments accepted</i>
6.2	Mon, 21 Oct	Predictability	Read: Dewar & Richard 2007
6.3	Wed, 23 Oct	Captive breeding and reintroduction	Read: McPhee 2003

6.4	Fri, 25 Oct	<i>Discussion of journal articles</i>	<u>Read:</u> Beck et al. 1995 <u>Read:</u> Jule et al. 2008 <u>Read:</u> Britt et al. 2003 <u>Due:</u> Reading response to Beck et al. 1995, Jule et al. 2008, and Britt et al. 2003
<u>7. Hydrology and aquatic ecology</u>			
7.1	Mon, 28 Oct	Role play exercise	
7.2	Wed, 30 Oct	Hydrologic cycle	<u>Text:</u> Houtman et al., Chpt 15
7.3	Fri, 1 Nov	Water use	
7.4	Mon, 4 Nov	Water pollution	<u>Text:</u> Houtman et al., Chpt 16
7.5	Wed, 6 Nov	Water pollution <i>Discussion journal articles</i>	<u>Read:</u> Morrison 2005 <u>Read:</u> Wu et al. 1999 <u>Due:</u> Reading response to Morrison 2005, Wu et al. 1999
	Fri, 8 Nov	EXAM 2	
<u>8. Soil, agriculture, and land use</u>			
8.1	Mon, 11 Nov	Soil	
8.2	Wed, 13 Nov	Agriculture & pest management	<u>Text:</u> Houtman et al., Chpt 18
8.3	Fri, 15 Nov	Agriculture & pest management <i>Discuss journal articles</i>	<u>Read:</u> Lewis et al. 1997 <u>Read:</u> Francis & Madden 1993 <u>Due:</u> Reading response to Lewis et al. 1997, Francis & Madden 1993
8.4	Mon, 18 Nov	<i>Movie & Discussion:</i> Suburban America: Problems & Promise	
8.5	Wed, 20 Nov	<i>Land-use planning exercise</i>	

<u>9. The atmosphere and climate change</u>			
9.1	Fri, 22 Nov	Atmosphere, pollution	<u>Text:</u> Houtman et al., Chpt 21 <u>Read:</u> Kolbert 2005 – Part I <u>Peruse:</u> Schneider & Sarukhan 2001
	Mon, 25 Nov	No class – watch movie Farm for the Future	
<u>Wed, Thurs 27, 29 Nov: No class – Thanksgiving Break</u>			
9.2	Mon, 2 Dec	Climate change	<u>Text:</u> Houtman et al., Chpt 22 <u>Read:</u> Kolbert 2005 – Part II <u>Due: Response to movie</u>
9.3	Wed, 4 Dec	Climate change	<u>Read:</u> Kolbert 2005 – Part III
9.4	Fri, 6 Dec	Climate change	
9.5	Mon, 9 Dec	Climate change discussion	<u>Read:</u> Telemeco et al. 2009 <u>Read:</u> Figueres et al. 2002 <u>Read:</u> McKibben 2012 <u>Due: Reading response</u> to Telemeco et al. 2009, Figueres et al. 2002, and Kolbert 2005 parts I, II, and III
<u>10. People, again: Turning science into action</u>			
10.1	Wed, 11 Dec	Human behavior, economics, and policy	<u>Text:</u> Houtman et al., Chpt 26
	Fri, 13 Dec	EXAM 3	

Bibliography for ES 260, fall 2013

M. Elsbeth McPhee

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