## ENR 2100 – INTRODUCTION TO ENVIRONMENTAL SCIENCE
THE OHIO STATE UNIVERSITY, AUTUMN SEMESTER 2014 (Au14)
GE Natural Science: Biological Science Class (3 credits)

### Lecture
Class 29102 (Prof. B.H. Lower): Mon Wed 4:30 pm – 5:50 pm; Moeller Hall, Room 117
Class 29230 (Prof. B.H. Lower): Tues Thur 11:10 am - 12:30 pm; Hitchcock Hall (HI) Room 131
Class 29852 (Prof. S.K. Lower): Tues Thur 9:35 am - 10:55 am; Hamilton Hall (HM) Room 107

### Professors
Dr. Brian H. Lower, Ph.D.
Dr. Steven K. Lower, Ph.D.

### Instructional Associate
Ms. Kylienne Clark, M.S.

### Grading (% of final grade)
- Midterm Exam (25%)
- Final Exam (25%)
- Poster (25%)
- Quizzes (25%, drop lowest quiz)

### Textbook (Recommended)
Scientific American
Published by W.H. Freeman

### Apple iTunes U

### Email
[OSUEnvironment@Gmail.com](mailto:OSUEnvironment@Gmail.com)

### Twitter
@OSUEnVirO

### Date | Topics: lecture topics subject to change, exact dates of quizzes & exams will be announced during lecture, so come to class! | Textbook Chapters or Directions
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Week 1 | Introduction, syllabus, metric system, graphs, statistics | Appendix 1,2,3
Week 2 | Environmental literacy, Scientific process, ozone and Antarctica, ecocentrism, EPA, risk assessment, scientific journals, peer review | 1,2
Week 3 | DDT, PCB, CFCs, BPA, bioaccumulation, biomagnification, runoff pollution, Puget Sound, Chesapeake Bay, toxicology, epidemiology | 3
Week 4 | Human population growth, carrying capacity, ecological footprint, food production, waste, ecosystems, biosphere, biomes, species, biodiversity, evolution, saving the rainforest | 5,7
Sept 18 | POSTER TITLE, ABSTRACT AND 10 REFERENCES ARE DUE (15% of your Poster Grade) | Due on-line
Week 5 | Biomes, tolerance for life, energy flow, biogeochemical cycles, saving the elephants, population ecology, predator-prey, Yellowstone National Park | 7,8
Week 6 | Community ecology, food webs, ecological succession, freshwater resources, water and food production | 9,17
Oct 7 | FIRST DRAFT OF YOUR POSTER IS DUE (15% of your Poster Grade) | Due on-line
Week 7 | Environmental cost of coal, carbon sequestration, greenhouse effect, climate change Nuclear Power, radioactive decay, waste storage, nuclear fission, review for exam | 23, 27
Week 8 | Catch up day, review for midterm exam | --
Oct 16 | MIDTERM EXAM (Covers lectures from Aug 28 – Oct 14, NO CLASS) | Take exam on-line using CARMEN
Week 9 | Water pollution, eutrophic, runoff, Pebble Mine, agriculture, U.S. Clean Water Act, agriculture and urban runoff, nonpoint source pollution | 18,19,21,22
Week 10 | Continue water resources, Superfund Sites, water recycling, fisheries and aquaculture, marine ecosystems, coral reefs | 15,16
Oct 30 | POSTER PEER REVIEWS ARE DUE (20% of your Poster Grade) | Due on-line
Week 11 | Air pollution, acid rain, NOx, SO2, particulate, asbestos, Pb, Hg, ozone, CO | 25
Nov 11 | NO CLASS, VETERANS DAY | --
Week 12 | U.S. Clean Air Act, coal ash waste ponds, heavy metal waste | 23
Week 13 | Environmental cost of petroleum, oil and tar sands, biofuel, catch up day, directions for poster symposium | 24,29
Nov 25 | POSTER SYMPOSIUM (PERFORMANCE HALL, OHIO UNION) 8:00 am – 5:00 pm (50% of your Poster Grade; NO CLASS) |
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Nov 27 | NO CLASS, THANKSGIVING BREAK |
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Week 14 | Climate change, Milankovich cycles, greenhouse gases, alternative and renewable energy, hydrogen, solar, geothermal, biofuel |
Week 15 | Catch up day, review for final exam |
Dec 12 | Class 29852, FINAL EXAM, 10:00 am-11:45 am (Cumulative; covers lectures from Aug 28 – Dec 9) |
Dec 15 | Class 29102, FINAL EXAM, 6:00 pm-7:45 pm (Cumulative; covers lectures from Aug 28 – Dec 9) |
Dec 17 | Class 29230, FINAL EXAM, 10:00 am-11:45 am (Cumulative; covers lectures from Aug 28 – Dec 9) |
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Symposium at the Ohio Union |
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*Every attempt has been made to ensure that the information in the syllabus is complete and accurate. However, mistakes such as typographical errors may occur on occasion. Professor Lower will address any errors on this syllabus during lecture. The schedule shown above is tentative and will likely change throughout the semester depending on how quickly or slowly we cover the material in class.

Textbook (recommended resource; read the textbook before coming to class)

*Environmental Science for a Changing World,* 1st Edition (2013) or 2nd Edition (2014), by Houtman, Karr, and Interlandi, published by W.H. Freeman. This textbook is available in two different formats: paperback (~$100) or e-Book ($50-$75). The material in the 1st and 2nd editions of this textbook is very similar, however, some chapter numbers are different in these two editions. **If you attend all classes you likely will NOT need to purchase the textbook. Save some money, attend class!**

To purchase the textbook visit one of the following sites:

1. Go to [http://www.coursesmart.com](http://www.coursesmart.com) and type in Houtman in the Search box at the top of the page. Our textbook will appear and you can purchase an eBook for about $75 for a 180-day rental.

2. Or you can purchase or rent the textbook from [www.Amazon.com](http://www.amazon.com) or another retail site.

Some exam questions will be taken from the assigned readings of this textbook or additional class assignments. I will not have time to lecture on every topic that is assigned from the textbook. However, you should read and understand the assigned pages whether I have time to present them during lecture or not.

**Final Grade**

Your final grade will be based on 1 midterm exam, 1 final exam, 1 scientific poster, and several quizzes. See the syllabus above for % of each component.

**Exams**

Examinations may consist of true/false, multiple choice, short answer, and essay questions. **All exams will be taken on-line using CARMEN.** You will NOT come to the classroom to take the exam. Rather, you take the exam from a location of your choosing that has Internet connection (e.g., dorm room, library). A significant number of exam questions will come from material presented in the lecture. Additional material will be drawn from the textbook, assigned readings and videos. Each student must complete the exam on her or his own. You are NOT permitted to receive assistance from anyone else during the exam. You are NOT permitted to take the exams as part of a group. You ARE permitted to use your own lecture notes and slides during the exam. Additional details will be provided in class.

There are **NO** make-up exams except for valid reasons (e.g., medical excuse). **If you are sick, you MUST have a note signed by your medical doctor (i.e. a licensed physician) and dated the same day as the exam.** Otherwise, you will receive a zero on the exam. **Dr. Lower will determine if your excuse is valid.** If you do
NOT have a reasonable excuse for missing an exam then you will receive a ZERO for the exam. Approved make-up exams will consist of multiple choice, short-answer and essay questions. An approved make-up exam will NOT be administered online but rather will be taken in person with paper and pencil.

Quizzes
Approximately one quiz will be given every other week. Quizzes will be announced during lecture. Many of these questions will be based on assigned readings and videos. You will take these quizzes either during lecture or online using Carmen. Your lowest quiz grade (or the one quiz that you forget to take) will be dropped.

Scientific Poster Presentation (details will be provided in lecture)
You will design, construct, and present a scientific poster to your classmates. First, you must pick a topic related to environmental science. Next, you should read at least 10 articles from well-respected sources (see example list below or use any of the sources that @OSUEnViRo is currently following on Twitter), which are related to this topic. After reading these articles, you will design and construct a poster describing the topic. Posters (36” x 48”) can be printed at a discounted cost of approximately $40 at UniPrint at the Ohio Union (https://uniprint.osu.edu/services/union.aspx) or at the School of Earth Sciences in Mendenhall Laboratory. Be sure to inform the staff that you are printing this poster for ENR2100 class so that you receive the discount. Details will be provided in class. You will present your poster to your classmates at the Environmental Science Symposium on November 25, 2014 in the Performance Hall at the Ohio Union. The symposium will take place from 8:00 am to 4:00 pm. Each student will be assigned a 2-hour time slot when you must remain at the symposium to present your poster. Do NOT wait until the last minute to print your poster! If you do NOT have a poster to present then you will receive a ZERO for your poster grade.


Grade Scale

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<th>Grade</th>
<th>A</th>
<th>93.00 to 100.00</th>
<th>A-</th>
<th>90.00 to 92.99</th>
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<td>B+</td>
<td>87.00 to 89.99</td>
<td>B</td>
<td>83.00 to 86.99</td>
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Apple iTunes U Intro Environmental Science
Some of the material for this class will be available through Apple iTunes: Intro Environmental Science. You can subscribe to this class at https://itunes.apple.com/us/course/intro-environmental-science/id601450178 which, will allow you to watch recorded lectures, download videos, slides, notes, apps and other material for class. This is an excellent supplement to the class, especially if you miss a lecture. This material is free.

GE Category and Expected learning outcomes
This course fulfills GE Category Natural Science, Biological Science. Natural Science coursework fosters students’ understanding of the principles, theories, and methods of modern science, the relationship between science and technology, the implications of scientific discoveries and the potential of science and technology to address problems of the contemporary world.

1. Students understand the basic facts, principles, theories and methods of modern science.
2. Students learn key events in the development of science and recognize that science is an evolving body of knowledge.
3. Students describe the inter-dependence of scientific and technological developments.
4. Students recognize social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.
Academic Misconduct
It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct (http://studentconduct.osu.edu).

Students with Disabilities
Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated, and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307, TDD 292-0901. http://www.ods.ohio-state.edu/

Communicating with Students
Periodic announcements and some lecture slides will be posted on Carmen. Announcements and news items will also be posted on Twitter: @OSUEnVirO

Dr. Lower has created a Gmail account specifically for this class: OSUEnvironment@Gmail.com

Dr. Lower will use your OSU email account to communicate with you. While many of you have other email accounts through services such as Goggle, Yahoo, or Hotmail, Dr. Lower will NEVER send email to these other accounts.

Teaching Assistants
Our teaching assistants are dedicated to your success. Each of the assistants listed below will hold regular office hours (hours and locations will be announced in class, Carmen and Twitter) throughout the semester to help you with any questions that you may have about class. Feel free to meet with any of the assistants throughout the semester.