

KWest Virginia University, Department of Civil and Environmental Engineering  
**CE 443: Environmental Science and Technology**  
Jennifer Weidhaas, Ph.D., P.E.  
Fall 2014

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LECTURE DAY/TIME/ROOM	TR 12:30-1:45/215 ESB
FORMAT	3 hour lecture, 3 credit hr
OFFICE	ESB 647
PHONE	304-293-9952
OFFICE HOURS	TR 2:00 to 4:00 or by appointment
EMAIL	jennifer.weidhaas@mail.wvu.edu

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### **COURSE OBJECTIVE**

The purpose of this course is to gain familiarity with current environmental science and technology issues, explore potential solutions to environmental issues and define the methods to incorporate sustainable solutions to these issues into Civil and Environmental Engineering practice. You will also gain experience in critical thinking skills and written and oral communication skills.

### **EXPECTED LEARNING OUTCOMES**

At the completion of this course you will:

1. Be familiar with current environmental issues and the principles underlying these problems (ABET student outcomes F, I, J, K)
2. Develop critical thinking and presentation skills to effectively determine key issues and relate solutions to a broad audience (ABET student outcome G)

### **GRADING POLICY**

Weighted average grades will be calculated based on the following distribution:

Manuscript reviews	40%
Class participation	10%
Midterm exam	25%
Final exam	25%

Final grades will be based on 90%, 80%, 70%...corresponding to A, B, C, ... The instructor reserves the right to curve up, e.g., upwards to a higher grade than earned on this scale. A one page, 8.5"X11" sized, double sided page of notes is allowed for exams. Assignments are due at the beginning of the assigned period. Late assignments will not be accepted.

### **MANUSCRIPT REVIEWS/JOURNAL CLUB**

Review of published manuscripts will be required (see course outline below). Each student will be required to submit a one to two page critical review of the manuscripts following accepted guidelines. Guidelines will be presented, but any review format is allowable as long as a thorough and thoughtful review and discussion of the manuscript is presented. Additionally, each student will be required to present a summary of one manuscript orally during class (5-10 minute summary) and lead the class discussion. Students will be required to submit their reviews through the <https://turnitin.com> website.

The course number is: 201408-CE-443-001 (BB 8296886)

The course password is: 2wh0y7c5

## PLAGARISM AND ACADEMIC DISHONESTY STATEMENT

Don't do it! Students found engaging in plagiarism, cheating or forgery during any assignment or test will be subject to the conduct code policies of the University that can be found on-line at <http://www.arc.wvu.edu/rightsa.html>.

## REQUIRED TEXT

There is no required text, however reading assignments as indicated in the course outline will be placed on the eCampus website or provided in class. These readings should be completed **prior** to the scheduled lecture and will be used as the basis for the class discussions.

## TENTATIVE COURSE OUTLINE

Date	Reading	Pages or Sections
8/19		
8/21	1-Peter Sanger, Practical Ethics	All
8/26	2-NAP, 2013, Environmental Decisions in the Face of Uncertainty	Pages 19 to 25, 24-25, 32-42, 54-55 (in the box), 61 to 68, 75, and 77-78
8/28	3-Kriebel, 2001, Environmental Health Perspectives	All
9/2	4-NAP, 2012, Science for Environmental Protection	Chapter 2
9/4	5-NAP, 2010, Advancing Science of Climate Change	Chapter 2
9/9	6-Ramirez-Llorda, 2011, Human Impact on Deep Sea	All
9/11	7-Andrady, 2011, Microplastics in Marine Environment	
9/16	8-Klaine, 2008, Nanomaterials in Environment	All
9/18	9-Marcoux, 2013, Emerging contaminants in waste	
9/23	10-Hernando, Environ. Risk Assessment of Pharms in Water	All
9/25	11-Benotti, EDCs in drinking water	
9/30	<b>Exam #1</b>	All
10/2	No class 10/2	
10/7	12-Lapworth, emerging contaminants in GW	All
10/9	13-Ellsworth, Injection induced earthquakes	
10/14	<b>Fall recess (10/14)</b>	
10/16	14-Brulle, 2006, Environmental justice	
10/21	15-Grant, 2012, Water reuse, Science	All
10/23	16-Benbrook, 2012, GMOs impacts on pesticide use in US	
10/28	17-Jacobsen, GMOs versus Ag biodiversity	All
10/30	18-Ajanovic, Biofuels vs. food production	
11/4	<b>No class (11/4) go vote!</b>	
11/6	19-Langhamer, Wave power	All
11/11	20-Leung, Wind energy	All
11/13	21-Tsoutsos, Solar energy	
11/18	22-Krook, Landfill mining	All
11/20	23-Forman, 1998, ecological effects of roads	
Week	<b>Happy Thanksgiving!</b>	
11/24		
12/2	24-Ortiz, Sustainability in construction	All
12/4	25-Ding, Sustainable construction, environ. assessment tools	
12/9	26-NRC, Examples of urban sustainability	Chapter 3
12/11	<b>Exam #2:Cummulative</b>	

**ATTENDANCE POLICY**

You are expected to attend all classes. If you have a specific problem with attendance, notify the instructor prior to class, unless the emergency is such that this is not possible. Consistent with University guidelines, students absent from regularly scheduled examinations because of authorized University activities will have the opportunity to take them at an alternate time. Make up exams for absences due to other reasons will be at the discretion of the instructor.

**SOCIAL JUSTICE STATEMENT**

“West Virginia University is committed to social justice. I concur with that commitment and expect to foster a nurturing learning environment based upon open communication, mutual respect, and non-discrimination. Our University does not discriminate on the basis of race, sex, age, disability, veteran status, religion, sexual orientation, color or national origin. Any suggestions as to how to further such a positive and open environment in this class will be appreciated and given serious consideration. If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with Disability Services (293-6700).”

## General Guidelines for Critical Reviews

There are two goals for the critical review exercises:

1. Become familiar with literature in current issues in environmental science and technology.
2. Develop the capacity to critically review scholarly papers in a thorough and quantitative manner. You may be called upon to do this as an academic reviewing manuscripts submitted to a journal, or as a professional who must decide on the validity and applicability of a particular research result to your work.

Papers to be reviewed are typically selected to be good examples of literature in this field, so don't feel that you have not been successful if you do not find any major points to criticize. However, even the best published papers have some errors (either of omission or commission). Your review should cover each of the major sections of the paper, but not necessarily in equal measure. Specific items will vary depending on the nature of the paper being reviewed.

Overall, your review will be evaluated for the following features:

- **Specificity.** Can I tell exactly what you mean? Would an author be able to respond to your comments?
- **Economy.** Do you convey your point in the minimum number of words? The text of these reports should not be very long, 1-3 pages of text (single-spaced) are probably sufficient plus any graphs or tables you generate. This important thing is to spend time thinking about the work and checking the calculations reported.
- **Thoroughness.** Do you comment on all important aspects of the work?
- **Evidence of understanding of the paper.** Do you appear to understand the main points the author is trying to convey?
- **Quality of the theoretical review.** Is your review of the chemistry/hydrology/etc. theoretically sound?
- **Quality of the quantitative review.** Are your calculations well documented and properly performed?
- **Advanced analysis of concepts.** Do you integrate the knowledge in the review into an understanding of how the issues may be address in civil and environmental engineering professional practice?

Review papers will receive an “A” grade only if the following three conditions are met: (1) the reviewer demonstrates an understanding of the concepts presented in the manuscript, (2) the reviewer extrapolates the main concepts of the paper into implications for Civil and Environmental Engineering practice outside of those already presented in the manuscript, and (3) the review paper is free from English and grammatical errors.