**ES 103—Fundamentals of Environmental Science**  
**Class time:** 10:30 am – 12:25 pm  
**Name of Faculty:** Dr. Cris G. Hochwender  
**Contact details:** ch81@evansville.edu

### Course Description
Fundamentals to Environmental Science is designed for students who are interested in exploring more about current environmental issues and problems as they affect our daily lives. Together, we will examine the impact that humanity has on the environment and discuss strategies to diminish those effects. In order to understand specific issues of this field, the focus of many discussions/lectures will focus on the biological, chemical, and geological bases of current environmental problems. Emphasis will be placed on ecological perspectives. The course consists of discussions, exams, and writing assignments.

### Credit Hour Policy Statement
This class meets the federal credit hour policy of:
- Standard lecture – e.g. 1 hour of class with an expected 2 hours of additional student work outside of class each week for approximately 15 weeks for each hour of credit, or a total of 45-75 hours for each credit.

### General Education Objective
This course meets the General Education requirements for: **Outcome 8: Scientific Literacy**

### Learning Objectives
Listed below are the Learning Objectives for the course:
The three major objectives of this course are:
(1) to provide a fundamental understanding environmental concepts framed in natural sciences,  
(2) to enhance your awareness of environmental concerns, and  
(3) to provide you with ways that you can improve the environment.

### Assessment and Grading Criteria
You are expected to attend all classes—see Harlaxton attendance policy. Grades will be based on: (1) three exams (60% of course grade), (2) writing assignments (30% of course grade), and (3) class participation (10%) (which will be evaluated based on invested discussion during class; consistent attendance is assumed). Writing assignments are discussed below. The format of exams will be discussed in class.

Course grades will be determined using the following scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>93% or above</td>
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<tr>
<td>A-</td>
<td>90-92%</td>
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<td>B+</td>
<td>88-89%</td>
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<td>B</td>
<td>83-87%</td>
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<td>B-</td>
<td>80-82%</td>
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<td>C+</td>
<td>78-79%</td>
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<td>C</td>
<td>73-77%</td>
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<tr>
<td>C-</td>
<td>70-72%</td>
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<td>D+</td>
<td>68-69%</td>
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<td>D</td>
<td>63-67%</td>
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<td>D-</td>
<td>60-62%</td>
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<td>F</td>
<td>below 60%</td>
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Teaching Methods


Other Class Materials: The following primary/secondary articles are provided by the instructor.


Teaching Methods: Discussion, lecture, field experiences, coupled with readings and writing.

Further Information about the Course

Expenses:
Approximately £25 in travel will be needed to cover the costs of travel: you will be invoiced through Harlaxton College for these costs. We hope to have three scheduled field trips to have first-hand experiences in England.
<table>
<thead>
<tr>
<th>Day</th>
<th>Topic/Assignment</th>
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<tbody>
<tr>
<td>M, May 28</td>
<td>Overview; Discussion of “Small Wonder” by Kingsolver—ways of knowing (discuss natural science); Discussion of Environmental Perspective Guide (Persephone Guide)</td>
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<td><strong>DO FOR TUESDAY:</strong></td>
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<td></td>
<td>1. Read Hardin Article</td>
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<td>2. Study Persephone</td>
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<td>T, May 29</td>
<td>Discussion of Persephone (cont). Discus Hardin article</td>
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<td><strong>DO FOR WEDNESDAY:</strong></td>
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<td></td>
<td>1. Read Statistics Handout</td>
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<td>2. Watch Video I (Nova: Population Paradox) before Wednesday—(Dr H provides sheet with perspectives &amp; Q’s)</td>
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<td>3. Read Hopkins 2016 news article &amp; assignment I</td>
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<td>W, May 30</td>
<td>Discuss Video I; Revisit Population issues</td>
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<td>Discuss Statistics Handout; Revisit Science as way of knowing</td>
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<td></td>
<td>Students bring printed copy &amp; read each other’s summary/response to news article.</td>
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<td>Discuss how to complete assignment #1 successfully.</td>
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<td><strong>DO FOR THURSDAY:</strong></td>
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<td></td>
<td>1. Read Dincer 2000 Article</td>
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<td>2. Review carbon cycle (Persephone)</td>
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<td>3. Fill in two tables (Energy guide; Criteria Air Pollutants)</td>
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<td>a. Using Dincer first</td>
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<td>b. Using EPA sites for info not available in Dincer</td>
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<td>Th, May 31</td>
<td>Discuss Dincer 2000 Article</td>
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<td>Discuss energy sources/Issues</td>
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<td>Discuss criteria air pollutants</td>
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<td>Discuss Greenhouse gases and climate change &amp; revisit carbon cycle</td>
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<td><strong>DO FOR MONDAY: READ LEOPOLD SECTION I (A Sand County Almanac)—underline profound points; take notes on environmental perspectives that resonate. Be ready to discuss.</strong></td>
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<tr>
<td>M, June 4</td>
<td>Discuss Leopold’s perspective on the environment; Discuss your perspective on the environment. Walk canal path. Use walk to ID species, discuss biodiversity, &amp; ask questions about the exam.</td>
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<td>T, June 5</td>
<td><strong>Exam; Writing Assignment #1 due by 5 pm.</strong></td>
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<td><strong>DO FOR WEDNESDAY:</strong></td>
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<tr>
<td></td>
<td>1. Review Ecology sections of Persephone and Statistics</td>
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<td></td>
<td>2. Read about biodiversity—what it is, why it is important, and threats to biodiversity:</td>
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<td><a href="http://www.noticenature.ie/learn.html">http://www.noticenature.ie/learn.html</a></td>
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<td><a href="http://www.noticenature.ie/why_is_it_important.html">http://www.noticenature.ie/why_is_it_important.html</a></td>
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<td><a href="http://www.noticenature.ie/threats_to_biodiversity.html">http://www.noticenature.ie/threats_to_biodiversity.html</a></td>
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<td>3. Read Wright et al. 2002</td>
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<td>4. Read Estes et al. 2011</td>
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<tr>
<td>Date</td>
<td>Assignment</td>
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| W, June 6  | Discuss what biodiversity is, why it is important, and the threats to biodiversity.  
   Discuss Wright et al. 2002  
   Discuss Estes et al. 2011  
   **DO FOR THURSDAY:**  
   1. Read Bohlen et al. 2004  
   2. Read Torchin and Mitchell 2004  
| Th, June 7 | Biodiversity: Discuss Invasives as threat  
   Discuss Bohlen et al. 2004  
   Discuss Torchin and Mitchell 2004  
   **DO FOR MONDAY: READ LEOPOLD PART II (Sketches Here and There). Be prepared to discuss.**  
   **DO FOR TUESDAY:**  
   1. Review Persephone as appropriate  
   2. Read Tilman et al. 2002  
   3. Read Sekercioglu 2010: summary of ecosystem services  
| T, June 12 | Discuss ecosystem functions and ecosystem services  
   Discuss Tilman et al. 2002, focusing on Green Revolution—strategies, harms, and sustainable agriculture solutions  
   **DO FOR WEDNESDAY:**  
   1. Review statistics handout  
   2. Read Broussard and Turner 2009  
   3. Read Lloyd et al. 2013  
| W, June 13 | Discuss negative impacts of human on ecosystem services  
   Discuss Broussard and Turner 2009  
   Discuss Lloyd et al. 2013  
   **DO FOR MONDAY: READ LEOPOLD PART III(The Upshot). Be prepared to discuss.**  
| M, June 18 | Discuss Land Ethics, Leopold. Walk Harlaxton woods. Use walk to ID species, discuss biodiversity, restoration ecology, & ask questions about the exam.  
   **DO FOR TUESDAY:**  
   Evening review for exam if requested.  
| T, June 19 | Exam  
   Writing Assignment #2 due by 5 pm  
   **DO FOR WEDNESDAY:**  
   1. Meet at the Bistro at 7 pm to discuss course  
| W, June 20 | Travel to Green Britain Center; get British perspective on “Green”. (http://www.greenbritaincentre.co.uk/home in Swaffam in Norfolk)  
   **DO FOR THURSDAY:**  
   1. Meet at the Bistro at 7 pm to plan rest of course.  
| Th, June 21 | As class: Watch The British Isles: A Natural History. Video  
   Take notes on British environmental perspectives.  
   **DO FOR MONDAY:**  
   1. Read Environmental Sustainability Documents regarding Harlaxton College |
M, June 25  
Discuss Harlaxton ES Docs. **Work on Restoration project.**

T, June 26  
**Writing Assignment #3 due by beginning of class**  
**Present PPT on assignment #3.**

W, June 27  
**Review; Comprehensive Final Exam**

**Assignments**

To encourage you to engage in exploring issues in Environmental Science on your own, you will be required to submit three class assignments during the course of this semester. These assignments will compose 30% of your grade.

**Practice Assignment #1:** Write one response to the article provided by your instructor. Write your response completely/fully/effectively. Bring your summary/response to class on the date designated in the syllabus. Provide a hard copy of this practice assignment! All written components should be type-written, double-spaced, and use 1” margins and 12-point Times New Roman font.

**Use the following article to develop your summary response.**
Hopkins, JS. 2016. Sept 29. Meet America’s super polluters. USA Today [Internet].  

Remember:
1. Your first paragraph should summarize the article (use in-text citations are fine for the article). See the rubric to have a better sense of a good summary.
2. Your second paragraph should provide additional knowledge you bring into your response—use literature that builds your perspective; news, journal, and book sources should have in-text citations and complete citations in the bibliography.
3. Your third paragraph should voice your response to the article. Your response should focus on the scientific perspective and/or the social/political action involved with the issue. *Don’t waste your writing and my time by focusing on your feelings nor on negative qualities of the writing/reporting.*

**Class Assignment #1 & #2.**  
(All written components must be submitted to TURNITIN.COM and LIVETEXT to receive credit.)  
**Assignment #1.** Discuss news articles related to **GLOBAL CLIMATE CHANGE.** Submit your writing to the instructor by the beginning of class on the date designated in the syllabus.  
**Assignment #2.** Discuss news articles related to environmental issues NOT associated with global climate change. Submit your writing to the instructor by the beginning of class on the date designated in the syllabus.

*Use electronic versions of news articles (but they MUST be from valid news!), and provide the website location for the article. Again, use web-based articles, but they must originate from legitimate news organizations. All articles should be published within the last year.*

For each article, write a **three-paragraph response** (a 1-2 pages). The first paragraph should summarize the article (use in-text citations are fine for the article). The second paragraph should summarize additional knowledge you had to find in order to understand/interpret the science from the article (journal and book sources should have in-text citations). The third paragraph should voice your response to the article. Your response should focus on the scientific perspective and/or the social/political action involved with the issue. *Your response should not focus on your feelings nor on negative qualities of the writing/reporting.* Realize that you need to pick a detailed article to receive full
credit (in other words, if the article is so simple that involves no underlying science, you can only receive 66% credit for the article—the then, only if you have written an exceptional response).

Your response should demonstrate proper writing skills (spelling, grammar, sentence structure), but should also voice your informed viewpoint. When you submit each set of 5 articles to turnitin.com and to LiveText, make sure to submit the set as a single file! Provide the websites for all articles so the instructor can access the news article. The instructor will grade your assignment using the Word document you submit to Turnitin.com. No hard copy of your assignment is required. USE THE PRACTICE ASSIGNMENT & GUIDE THEREIN TO HELP YOU SUCCEED ON THESE ASSIGNMENTS! Also use the grading rubric as a guide to know how your grade will be determined.

Assignment #3: Invasive species paper/presentation—British or US invasive. The introduction of exotic species into an ecosystem in which it did not evolve can often disturb the balance among the organisms in that community. Therefore, understanding the cause for and control of invasive species is of primary importance in environmental studies. Your presentation should include slides with the following types of information:

1. A title slide that includes: an informative title, the student’s name, the name of the invasive species (common + scientific), the course name, the date.
2. Slides that discuss the invasive species life history information: include where its native habit was, what it feeds on or where it commonly grows, special adaptations that aid in invasiveness, its life cycle, reproduction information, and natural enemies if known.
3. Slides that discuss invasion information: when the species invaded, where it invaded—its distribution, how serious of a problem it is—financial and ecological.
4. Slides that discuss control solutions, if some exist. Possible control solutions, if none currently exist.
5. Reference slide, including where images and text were taken from.

Your presentation should run 10 minutes (an additional 3 minutes will be available for questions). If your presentation is much shorter than this, you should consider acquiring more research on the subject, or you should consider contrasting the invasive species to a native, related species.

Alternative #3 assignment: Discuss your field trip experiences, ES course/readings, and write your own “Leopold”-like Land Ethic. Present on this assignment instead of Assignment #3.

Attendance Policy

Harralxton College operates a mandatory attendance policy that is binding on all faculty and students.

In the Summer Semester only ONE unexcused absence will be allowable. Additional unexcused absences will attract an overall grade penalty of a third-of-a-letter grade for each unexcused absence (e.g. one additional unexcused absence would result in an A- being reduced to a B+).

Students are responsible for the academic consequences of their failure to attend class.

Drop/Add and Withdrawal Policy

The course is subject to the UE drop/add policy as modified to apply to a summer semester of study in the UK context.
Disability Policy

It is the policy of the University of Evansville (Harlaxton College) to make reasonable accommodations for students with properly documented disabilities. University of Evansville students should contact the Office of Counselling and Health Education to seek help with this. Students from Partner Universities/Colleges should contact their own relevant student support office. For assistance whilst at Harlaxton students should contact the College Secretary whose office is located adjacent to the Principal’s office.

Written notification to faculty from the College Secretary is required for academic accommodations to be implemented.

Honor Code

All students at the University of Evansville (Harlaxton College) agree to and are bound by the principles and practice of the Honor Code:

‘I understand that any work I submit for course credit will imply that I have adhered to this Academic Honor Code: I will neither give nor receive unauthorized aid, nor will I tolerate an environment that condones the use of unauthorized aid.’

The full Honor Code is available online:
https://www.evansville.edu/offices/deanstudents/downloads/honorcode.pdf