

BSCI 215 I course: Global Sustainability: A Biologist's Perspective

Tues. Lectures 9:30-10:45am and Thur. Discussion 9:30-10:45am Plant Sciences room 1140

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Office hours: 2-3 Wed. and Thur. 10-12 or by appointment

Teaching Assistant: _____

The goals of this "I" series course are to overview basic ecological and evolutionary principles and then explore how they relate to current dilemmas such as overpopulation, pollution, preservation of biodiversity, increasing consumption of natural resources, and deteriorating land use ethics facing humankind today. Specifically we will address these major stumbling blocks in discussion and investigate what can be done via an ecological and evolutionary framework through both domestic and global agendas. I will use an interactive teaching style combining lectures with class discussions. Each lecture topic will address fundamental ecological and evolutionary principles that can be applied to the discussion readings and to each student's independent investigations in discussions throughout the course.

We will use the **free** online text book by Lester Brown (listed below) to initiate our weekly discussions. Each student will choose a target population (state in the US or a country around the world) to investigate how each topic applies to their target population weekly.

Each student will also be expected to find peer reviewed articles (n=10) that they will annotate to share at discussions and will be the basis for their final paper on their target population. The smaller discussion group format allows students to address each lecture topic and how it relates to their target population. The semester will conclude with individual presentations by students on a chosen aspect of their target population related to our textbook.

Class Rules for Success: To assure success in this course each student should complete the readings prior to class and attend all classes. At each discussion every student will be expected to provide a summary statement about how their chosen target population is dealing with the issues that we are discussing through lectures and our readings OR will they be asked to identify and summarize a newsworthy event/article related to the discussion topic to share.

Please Note: It is the student's responsibility to inform the instructor of any intended absences for religious observances or for any other planned absences. The student must personally hand the instructor a written notification of the projected absence within two weeks of the start of the semester. The request should not include travel time. Please note that all course exams are considered major scheduled grading events.

Textbook: Book Title: Plan B 4.0: Mobilizing to Save Civilization 2009. By Lester R. Brown FREE pdf can be found at address below or on ELMS web site for the course:

http://www.earth-policy.org/images/uploads/book_files/pb4book.pdf

The Natural Sciences learning goals for this course are for students to be able to:

1) Demonstrate a broad understanding of ecological and evolutionary principles (e.g. exponential growth and natural selection) that are fundamental to basic research and how they can be applied to achieving global sustainability.

- 2) Understand how scientists apply quantitative and mathematical analyses (e.g., Life table construction to estimate potential for population growth) to science problems by reading the primary literature and through web based investigations.
- 3) Appreciate the complexity of solving scientific challenges involved with achieving global sustainability in the context of both the local and global political, social, ethical, and economic constraints.
- 4) Critically evaluate scientific data to both understand the limits of scientific knowledge and to hypothesize what information is needed next to address a scientific challenge in achieving global sustainability, and to apply this critical evaluation in the context of in class group discussions throughout the semester and by preparing a final paper.
- 5) Communicate their mastery of these skills by presenting to their peers a final project in which they address a specific scientific problem, compile the data currently available, assess the limits of scientific knowledge on this topic, and propose ideas for future scientific research.

Sustainability Initiatives at University of Maryland:

http://cte.umd.edu/programs/graduate/lillygraduate/@last/Applying_Todays_Learning_to_Achieve_a_Sustainable_Tomorrow/Welcome.html

<http://www.sustainability.umd.edu>

Class Schedule

Thur. 30 Aug.	<i>Lect. 1</i>	<i>Introduction to Ecology and Plan 4.0B</i>
Tues. 4 Sept.	<i>Lect. 2</i>	<i>Ecosystem Function</i>
Thur. 6 Sept.	<i>Lect. 3</i>	<i>Community Ecology</i>
Tues. 11 Sept.	<i>Lect. 4</i>	<i>Population Ecology</i>
Thur. 13 Sept.	<i>Lect.</i>	Complete lecture material and prepare for Discussions
Tues. 18 Sept	Disc. 1	Chap. 1: Selling our Future – overview
Thur. 20 Sept.	Disc. 2	<u>Challenges:</u> Chap. 2: Population Pressure- Land & water limitations
Tues. 25 Sept.	Disc. 3	Chap. 3: Climate Change and Energy Transition
Thur. 27 Sept.	Disc. 4	Review for exam 1 <u>Response:</u>
Tues. 2 Oct.	<i>Lect. 5</i>	Chap. 4: Stabilizing climate, energy efficient revolution
Thur. 4 Oct.	Exam 1	<i>Population Ecology – A mathematical approach</i> 100 points: Lectures and Discussions 1-3
Tues. 9 Oct.	Disc. 5	Chap. 5: Shifts to renewable energy
Thur. 11 Oct.	<i>Lect. 6</i>	<i>Natural, Artificial and Sexual selection</i>
Tues. 16 Oct.	Disc. 6	Chap. 6: Designing cities for people
Thur. 18 Oct.	<i>Lect. 7</i>	<i>Artificial Selection to alleviate world food crisis: The role of genetic modification to feed the planet</i>
Tues. 23 Oct.	Disc. 7	Chap. 7: Eradicating poverty & stabilizing population growth
Thur. 25 Oct.		Review for exam 2
Tues. 30 Oct.	<i>Lect. 8</i>	<i>Preservation of Biodiversity: Conservation and Restoration</i>
Thur. 1 Nov.	Exam 2	100 points: Lectures and Discussions 4-7
Tues. 6 Nov.	Disc. 8	Restoring the Earth (Chap. 8)
Thur. 8 Nov.	<i>Lect. 9</i>	<i>Preservation of Biodiversity: Role of speciation?</i>
Tues. 13 Nov.	Disc. 9	Feeding 8 billion people well (Chap. 9)

Thur. 15 Nov.	Lect. 10	<i>Achieving a balance: Global ecology and societal pressures</i>
Tues. 20 Nov.	Disc. 10	<u>The Great Mobilization: (Chap. 10)</u>
Thur. Nov. 22		Thanksgiving!
Tues. 27 Nov.		Power Point Presentations
Thur. 29 Nov.		Power Point Presentations
Tues. 4 Dec.		Power Point Presentations
Thur. 6 Dec.		Power Point Presentations (DUE Final papers)
Tues. 11 Dec.		Power Point Presentations <u>and</u> Review for final exam
Dec. 13-19?		Exam 3: 150 points: Lectures and Discussions 8-10 and student presentations

Grading: with a total of 610 possible earned points.

- 1) Two essay based exams with each worth 100 points with a 3rd final exam of 150 points for a total of = 350 points
- 2) Oral power point presentation = 50 points
- 3) Discussion = 10 points/9 classes plus 20 points when discussion leader = 110 points
- 4) Final paper using at least 10 Peer Reviewed research articles (one page abstract with a 1000 word paper using 11 or 12 point Arial or Times New Roman font) = 100 points

Course Total = 610 points with A \geq 90%, B \geq 80%, C \geq 70%, D \geq 60% and F < 60%

PEER REVIEWED research articles can be accessed via Web of Science through Research Port at UMD library site:

http://apps.webofknowledge.com/WOS_GeneralSearch_input.do?product=WOS&search_mode=GeneralSearch&SID=4Blf29EDHcLfjaCbnOi&preferencesSaved
or via Google Scholar: <http://scholar.google.com/>.

The prompt for your final paper is to address the overarching goals of Plan 4.0B for your target population: 1) Stabilize population growth, 2) Eradicate poverty, 3) Restore the earth natural support system, and 4) Stabilize climate.

How to references: Please use approved Chicago or Turabian System

http://www.lib.umd.edu/guides/citing_chicad.html

Within body of the text:

(Last name, year) in chronological order. (Dudash and Fenster 1997; Kephart 2006)
OR by number as listed with the same number in the Literature Cited.

Literature Cited: Alphabetical by lead author:

Kephart, S. R. J. Reynolds, M. Rutter, C. B. Fenster, and **M. R. Dudash**. 2006. Pollination and seed predation by moths on *Silene* and allied Caryophyllaceae: **New Phytologist** 169: 667-680.

Web resources: whole ref ...http.... Such that I can find the reference. For example:
<http://bisi.umd.edu/biologicalsciencesgraduateprogrambisi/beeseminars> Accessed August 28 2012.

RECOMMENDATION: Number all references in the Literature Cited either in alphabetical order or in the order you reference them in your paper. Then use only the number (1) of each reference within the body of the paper when you reference each source.

• **Academic Accommodations:** If you have a documented disability, you should contact Disability Support Services in Susquehanna Hall (301- 314-7682). Each semester students with documented disabilities should apply to DSS for accommodation request forms which you can provide to your professors as proof of your eligibility for accommodations. The rules for eligibility and the types of accommodations a student may request can be reviewed on the DSS web site at <http://www.counseling.umd.edu/DSS>

• **Religious Observances:** The University System of Maryland policy provides that students should not be penalized because of observances of their religious beliefs, students shall be given an opportunity, whenever feasible, to make up within a reasonable time any academic assignment that is missed due to individual participation in religious observances. It is the responsibility of the student to inform the instructor of any intended absences for religious observances in advance. Notice should be provided as soon as possible but no later than the end of the schedule adjustment period. Faculty should further remind students that prior notification is especially important in connection with final exams, since failure to reschedule a final exam before the conclusion of the final examination period may result in loss of credits during the semester. The problem is especially likely to arise when final exams are scheduled on Saturdays.

• **Academic integrity:** The University of Maryland has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit <http://shc.umd.edu/SHC/Default.aspx>

The University of Maryland is one of a small number of universities with a student-administered Honors Code and an Honors Pledge. The code prohibits students from cheating on exams, plagiarizing papers, submitting the same paper for credit in two courses without authorization, buying papers, submitting fraudulent documents, and forging signatures. The University Senate encourages instructors to ask students to write the following signed statement on each examination or assignment: "I pledge on my honor that I have not given or received any unauthorized assistance on this examination (or assignment)."

University's Code of Academic Integrity: <http://www.jpo.umd.edu>
Honor Pledge

1. On every examination, paper or other academic exercise not specifically exempted by the instructor, the student shall write by hand and sign the following pledge:

I pledge on my honor that I have not given or received any unauthorized assistance on this examination.

Failure to sign the pledge is not an honors offense, but neither is it a defense in case of violation of this Code. Students who do not sign the pledge will be given the opportunity to do so. Refusal to sign must be explained to the instructor. Signing or non-signing of the pledge will not be considered in grading or judicial procedures. Material submitted electronically should contain the pledge; submission implies signing the pledge.

2. On examinations, no assistance is authorized unless given by or expressly allowed by the instructor. On other assignments, the pledge means that the assignment has been done without academic dishonesty, as defined above.
3. The pledge is a reminder that at the University of Maryland students carry primary responsibility for academic integrity because the meaningfulness of their degrees depends on it.