1. Instructor and PLA Information

2. Information about Course Support Staff

3. Course Goals and Description
With a growing world population, changes on the landscape are increasingly compounding environmental problems. In this course we will explore the complex ecological challenges faced in today’s world. We will examine causes, trends, impacts, and solutions to land use changes, climate variability, loss of habitat and biodiversity, and other similar ecological problems from scientific, social, ethical, philosophical, and technological perspectives to gain a more complete picture of such challenges and possible ways of addressing them. This is the key to becoming effective citizens of the 21st century.

In this class, students will work to accomplish the following:

a. Identify critical ecological issues of local, regional, and/or global importance
b. Understand the opportunities and risks of environmental changes
c. Critically analyze, interpret, and evaluate the complexities of ecological issues.
d. Know the key stakeholders including scientists, political leaders, business leaders, philanthropists, and citizens.

Learning Objectives (Student Learning Outcomes)
Through our work together, we will meet the learning objectives of the Great Problems Seminar.

Students will

a. be effective in oral, written, and visual communication,
b. function effectively both individually and on teams,
c. be able to identify, analyze, and solve problems creatively through sustained critical investigation,
d. be able to make connections between disciplines and to integrate information from multiple sources,
e. be aware of how their decisions affect and are affected by other individuals and groups,
f. be aware of personal, societal, and professional standards, and
g. have the skills, diligence, and commitment to excellence needed to engage in lifelong learning.

4. Required Course Materials
Readings will be posted on the course page found on myWPI or via the library
You will be required to read the above book during the break between terms. We expect that you have read this by the first day of class on Thursday, Oct. 29th.

Copyright © 2016 Marja Bakermans & Geoff Pfeifer
5. Tentative Schedule (A term)

Session 1 (8/28) Introduction
  Readings: Earth Systems, Chapter 1 (available on MyWPI)
  Kate Soper “What is Nature: Culture Politics and the Non-Human” (MyWPI)
  Assignment 1: Self and Nature Assignment (Due 9/4)

Session 2 (9/1) Global change - Land / ATC Visit on presentations
  Reading: CH 1 in Land Use and Climate Change by S.C. Rai. 2009 (available online)
  Foley et al. 2005. Global Consequences of Land Use (MyWPI)
  Assignments 2 & 3: Land Change /Annotated Bibliography Assignment (Due 9/8)

Session 3 (9/4) Ethics / Library Visit
  Assignment 1 due (Self and Nature)
  Readings: Ethics (MyWPI)
  Assignment 4: Ethics Assignment 1 (Due 9/11)

Session 4 (9/8) Land Change Presentations
  Assignments 2 & 3 due (Land Use Change Assignment)
  Assignment 5: Presentation summary (Due 9/15)

Session 5 (9/11) Guest- Bonnie Walker / Environmental ethics
  Assignment 4 due (Ethics assignment 1)
  Readings: Sanders, "Reading Leopold" (MyWPI)
  Leopold, "The Land Ethic" (MyWPI)

Session 6 (9/15) Global Change - Land / Climate
  Assignment 5 due (Presentation summary)
  Readings: IPCC Climate Change 2013 Report -The Physical Science Basis (MyWPI)
  Climate Literacy: The Essential Principles of Climate Science (MyWPI)
  Research Notebook 1: due by end of class
  Assignment 6: Climate change jigsaw (Due 9/22)

Session 7 (9/18) Ethics, social, and policy issues (Climate Change/Environmental Justice)
  Readings: Sand Wars, Oceans of Trouble, A cooling Trend (MyWPI)
  Kahan. D. 2012. Why we are poles apart on climate change. (MyWPI)
  Chapter 1 in State of the World
  Assignment 7: Crosstown Biodiversity (due 9/29)
  Research Notebook 2 (due 9/25)

Session 8 (9/22) Climate Change Jigsaw
  Assignment 6 due (Climate Change Jigsaw)
  Readings: Chapter 2 in State of the World
  Pages 1 - 13 in Linkage between Biodiversity and Land Use Informatics and Climate Change (MyWPI)
  Assignment 8: Ethics Assignment 2 (due 10/2)
Session 9 (9/25) Global change - Ecosystems / Biodiversity
Research Notebook 2 due
Readings: Oliver and Morecroft. 2014. (MyWPI)
Meadows, “Biodiversity: The Key to Saving Life on Earth” (MyWPI) Species Case Studies (MyWPI)

Session 10 (9/29): Biodiversity Presentations / Guest: Martin Burt
Assignment 7 due (Crosstown Biodiversity)
Readings: Machovina et. al. 2015 (MyWPI)
Assignment 9: Pitch a Project (due 10/6)

Session 11 (10/2) Pick Projects; Possible visits from Community Partner
Assignment 8 due (Ethics Assignment 2)

Session 12 (10/6) Pitch a project presentations
Assignment 9 due (Pitch a project)

Session 13 (10/9) Research Design / Work day / Library consultation
Readings: Pages 110-120 in Research Design by J. Creswell (MyWPI)
Survey Design Best Practices by Paula Quinn Consulting (MyWPI)

Session 14 (10/13) Project Proposal due and Presentations

6. Grading Policy/Summary (A term)
1. Assignments (9)- 45% (5% for each assignment)
2. Project Proposal- 20%
3. Project proposal presentation- 15%
4. Attendance and Participation- 10%
5. Research Notebook- 10%

Tentative Schedule (B term)
Session 1 (10-29) Upcycle
Readings: The Upcycle (read this between terms)
Assignment 1: Upcycle reflection/questions (Due 11/5)
Assignment 2: Revised proposal (Due 11/9)
Research Notebook: Research Notebook Entry #1 (due 11/2)

Session 2 (11-2) Teamwork/group problem solving
Research Notebook entry #1 due
Readings: CHs 1 & 3 in Team Writing book
ALL on MyWPI: Understanding Teams (Chap 1); Team Beginnings (Chap 3)
Assignments 3 & 4: Contact assignments, part 1 and 2 (Due 11/9 and 11/16)
Session 3 (11-5) Reading discussion / team meetings
Assignment 1 due: Upcycle
Readings: CHs 2 & 4 in Team Writing
Assignment 5: Blog # 1 (Due 11/12)

Session 4 (11-9) Work day / Library in-class work
Assignment 2 due: Revised proposal
Assignment 3 due: Contact assignment, part 1
Research Notebook entry #2 due
Readings: CH 8 in Team Writing and CH 11 (Problem Solving) on myWPI
Assignment 6: Solution and presentation (due 11/16)

Session 5 (11-12) Technology and Society Discussion
Assignment 5 due: Blog # 1 – Post questions and responses before class
Readings: On myWPI
Video: NOVA: Megastorm Aftermath
Assignment 7: Blog # 2 (Due 11/19)

Session 6 (11-16) Project Solution Presentation
Assignment 4 due: Contact assignment, part 2
Research Notebook entry #3 due
Assignment 6 due: Solution and presentation
Readings: CHs 5 & 6 in Team Writing
Assignment 8: Group progress presentation (due 11/23)

Session 7 (11-19) Case study, Coffee
Assignment 7 due: Blog #2 - Post questions and responses before class
Readings: On myWPI

Session 8 (11-23) Project Progress Presentation
Assignment 8 due: Group progress presentation
Readings: CH 7 in Team Writing
Research Notebook entry #4 due

Session 9 (11-30) ATC presentation about posters / Work on projects
Research Notebook entry #5 due
Assignment 9: Poster draft (Due 12/7)
Assignment: Final Report (Due 12/17)

Session 10 (12-3) Work day

Session 11 (12-7) Present Draft Poster
Research Notebook entry #6 due
Assignment 9 due: Present poster draft
Session 12 (12-10) Poster Practice Session (pick up posters before class)

Session 13 (12-14) Poster Session 10-12 pm (this replaces class time)

Session 14 (R 12-17) Discussion and feedback session
  Final Report Due before class
  Research Notebook entry #7 due - Statement of Learning

IMPORTANT NOTE: The above schedule, policies, procedures, and assignments in this course are subject to change. Professors Pfeifer and Bakermans reserve the right to make changes to the Course Syllabus throughout the term.

6. Grading Policy/Summary (B term)
   1. Poster and poster presentation – 20%
   2. Written report – 15%
   3. Revised proposal (i.e., Assignment 2)– 10%
   4. Solution proposal (i.e., Assignment 6)– 10%
   5. Research notebook (7 total)– 15%
   6. Assignments (Assignments 1, 3-5, 7-9; 7 total) - 20%
   7. Attendance and participation – 10%

7. Teaching Methodology

8. Course Policies / Student Responsibilities

9. Additional assignment information

[Please feel free to contact me for additional information: mbakermans@wpi.edu]