Course Syllabus
School of Public Policy
University of Maryland

PUAF 741
Global Environmental Problems
Prof. Nathan E. Hultman
Fall 2012

Course meetings
Tue 4:15 – 6:45 pm lecture
1221 Preinkert

Course description
About a generation ago, many environmental problems came to be seen not only as issues for a local region or even a country, but rather as pervasive problems affecting the entire planet. Persistent pollutants, air and water pollution, habitat loss, and species extinction were in the vanguard of this evolution in perspective, followed by truly global scope problems such as ozone depletion and climate change. Undergirding the increasing focus on global problems were persistent questions about resource scarcity, population, and what came to be known as sustainable development. This course investigates our understanding of such Global Environmental Problems, first by examining and assessing the science behind several such issues, and then by situating each in its historical and policy context. In doing so, we hope to establish both a facility with the basic elements of each issue as well as a critical perspective on how that issue overlaps with questions about development, security, equity, and environmental protection.

Contact Information

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Syllabus Version: 1.0
Readings

**Required Books**

Botkin and Keller, *Environmental Science: Earth as a living planet.* Wiley. **Please note:** The bookstore will only stock the newest (8th) Edition, for full price. However, I suggest you use an earlier edition as they are not that different and will only run you about $30 online.


**Other readings.** Other required readings will be available online via direct links in the syllabus, or on electronic course reserves.

Assignments and Exams

- Three 1-page **reading critiques**
- Four **problem sets**
- An **op-ed** to be submitted to a media outlet
- One mid-term **quiz**
- A **final exam**

Four Reading Critiques are assigned. You may turn in assignments after their due date, but you must pay a penalty. If the paper is late by a day or less, you can get up to half credit. Between 1 and 3 days late, you can get up to 25%. After three days late, you don’t get any credit, but consider doing it anyway for the practice.

  - Up to 1 day late: Half credit maximum
  - 1 to 3 days late: 1/4 credit maximum
  - After 3 days late: No credit

Your participation grade includes attendance and discussion in class.

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<thead>
<tr>
<th>Assignment</th>
<th>Percentage</th>
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<tr>
<td>Op-Ed</td>
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<tr>
<td>Problem sets (4)</td>
<td>20%</td>
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<tr>
<td>Quiz</td>
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<tr>
<td>Final Exam</td>
<td>35%</td>
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<tr>
<td>Reading critiques (3)</td>
<td>15%</td>
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<tr>
<td>Participation</td>
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Schedule of Lectures and Readings

Note: Readings are to be completed before the lecture on the day that they are listed

Sep 04
Week 1. Introduction

In class:
• Introductions
• Course overview

Axelrod, Vandeveer, and Downie (AVD) Ch 1 “Introduction: Governing the global environment”
Botkin & Keller (B&K) Ch 1 “Key themes”. For all the B&K chapters, you can skip the “learning objectives”, and in general you don’t need to read the boxes and “critical thinking issue” elements unless you find them interesting. Ignore the study questions. However please do look at the figures carefully (e.g. Fig 1.11)

September 11
Week 2. Systems Models and Quantitative Approaches

In class:
• Tools of the trade
  o Stock-flow models
  o Residence times
  o Feedbacks
• Science in the environmental policy arena
• Hand out PS1

Pielke. pp. 1-38. Intro
B&K Ch 2 “Science as a way of knowing” including “A closer look 2.2”
B&K Ch 3 “Basic systems concepts”
B&K Ch 6 “Biogeochemical cycles”

September 18
Week 3. Population; Resource Scarcity

In class:
• Population debates
• Demographic projections
• The IPAT discussion
• Resource scarcity and Limits to growth
  • Due: PS1

B&K Ch 4 “Human population and the environment”


**September 25**

**Week 4. Air Pollution**

In class:
- Air pollution: Acid rain, Smog, Indoor air pollution
- Human health impacts
- Airshed management & governance
- Hand out PS2
- Due: Reading Critique 1. Hartmann

B&K Ch 21 “Air pollution” (Except 21.3 on Ozone, which we will do later)
AVD Ch 2, Soroos, “Global institutions and the environment: an evolutionary perspective”

**October 02**

**Week 5. Hazardous Chemicals**

In class:
- Regulation of chemicals
- 50th Anniversary of *Silent Spring* (September 27)
- Health and development
- Hand out PS3
- Due: PS2

B&K Ch 10 “Environmental health, pollution, and toxicology”
Carson, Rachel (1962), *Silent Spring*. Chs. 1-3  (e-reserve)

AVD Ch 7, Selin, “Global Politics and Policy of Hazardous Chemicals”
October 09
Week 6. Quiz / Rachel Carson

In class:
• Quiz
• Due: PS3
• Video & Discussion: American Experience, “Rachel Carson’s Silent Spring”

Catch up on readings thus far.

October 16
Week 7. International Action on the Ozone Layer

In class:
• Ozone chemistry and recent developments
• Evolution of international ozone politics
• Due: Reading Critique 2. Pielke Chs 1-2

Pielke Ch 1-3. "Four idealized roles of science in policy and politics", “The big picture, science, and democracy”, “Science and decision-making”
B&K Ch 21 “Air pollution” section 21.3

Week 8. Contested Expertise: Nuclear Power & Environment

In class:
• Radiation units, doses, and risk
• Nuclear power fuel cycle
• Nuclear waste / Spent fuel storage
• Risk and values in public discourse
• Hand out PS4
• Nuclear expansion after Fukushima

B&K Ch 17 “Nuclear energy and the environment”
Optional
AVD Ch 14, Axelrod, “Democracy and nuclear power: The Czech case and the global nuclear renaissance”

October 23
Week 9. Biodiversity

In class:
- Biodiversity, deforestation
- REDD
- Hand out Op-Ed guidelines
- Due: PS4

B&K Ch 8 “Biological diversity and biological invasions”
B&K Ch 13.4-13.10 “Endangered Species”
Pielke, Ch. 4 “Values”
AVD Ch 3, Peel, “Environmental protection in the 21st Century: The role of international law”

Oct 29
Week 10. Risk Assessment, Science, and Precaution

In class:
- Process of Science and scientists in public discourse
- Uncertainty and values
- Scientific input to Cost-benefit analysis
- Precautionary principle and applications

B&K Ch 7 “Economics of environmental issues”
Pielke, Ch. 8 “When scientists politicize science”
Pielke, Ch. 9 “Making sense of science in policy and politics.”

November 06
Week 11. Agriculture, Aquaculture, and Fisheries

In class:
- Environmental impacts from food provision
- Commodity chains and environment

B&K Ch 11 “Agriculture, aquaculture, and the environment”
B&K Ch 13 “Wildlife, Fisheries...” (Sections 13.1 – 13.3)
AVD Ch 15, Vandeveer, “Consumption, commodity chains, and the global environment”
AVD Ch 8, Esty, “Economic integration and environmental protection”
November 13

Week 12. Oceans and Water

In class:
- Water as a global environmental issue
- Ocean biodiversity
- Wetland loss
- Ocean acidification

B&K Ch 18 “Water supply, use, and management”
B&K Ch 19 “Water pollution and treatment”


November 20

Week 13. Climate Change

In class:
- Basic climate change science
- Impacts & Adaptation
- Models, policy, and scientific judgment
- Agenda for Doha Climate conference
- Due: Reading Critique 3. Hartwell paper

B&K Ch 20 “The atmosphere, climate, and global warming”
IPCC AR4 WG1 “The Physical Science Basis” Summary for Policy Makers
http://www.ipcc.ch/pub/spm22-01.pdf

Pielke, Ch. 6 “How science policy shapes science in policy and politics”
AVD Ch 6, Betsill, “International climate change policy: Toward the multilevel governance of global warming”

Hartwell Paper http://www.lse.ac.uk/collections/mackinderProgramme/theHartwellPaper/

http://www.brookings.edu/research/opinions/2011/12/12-durban-platform-hultman

Optional:
November 27


In class:
- Role and functions of international law
- States and nonstate actors
- The genesis and legacy of Rio
- Rio+20
- **Due: Op-Ed**

AVD Ch 4, Downie, “Global environmental policy: Governance through regimes”
Holt, R. “Trying to get us to change course”, *Science* 317: 198-199.
http://www.brookings.edu/research/opinions/2012/06/25-rio-20-conference-hultman


Optional: AVD Ch 5, McCormick, “The role of environmental NGOs in international regimes”

Dec 04

Week 15. Domestic and Multilateral Institutions for Environmental Protection

In class:
- Guest lecture: Prof Stephanie Lansing from Dept of Env Sci & Policy
- Cases of the US, EU, and China
- Review for final led by Gayatri

AVD Ch 11, Axelrod, Shreurs, & Vig, “Environmental policy making in the EU”
AVD Ch 10, DeSombre, “The US and global environmental politics: Domestic sources of US unilaterality”
AVD Ch 13, Lewis and Sims Gallagher, “Energy and Environment in China”

Dec 11

Week 16. Recasting “Sustainable Development”

In class:
- Elements of sustainability, development, innovation, entrepreneurship
- The Green Growth agenda
- Class exercise: Rio+20 and Global Green Growth Forum

AVD Ch 12, Najam, “The view from the South: Developing countries in global environmental politics”
December 13, 14, or 15 - TBD

Week 17. Final Exam

Time TBD
(SPP has to schedule this for us and it is not usually done until early October)
Details on the final exam:
• Coverage will be comprehensive -- all material/topics in the course are fair game.
• I am looking to see what you know, not trying to trip you up on what you don’t
• I am looking to see that you understand
  o the major scientific drivers of global environmental problems
  o the ways that environmental science and scientists interact with the policymaking process
  o diverse perspectives on the drivers of environmental change and human security
  o The historical changes in approaches to governing environmental problems
• Format will be short answer (paragraph) and longer (1-2 page) essays
• Closed book – though you can bring in one standard sized (8.5 x 11) “crib sheet” of paper with notes that you will then hand in
• The test will be designed to be completed in 3 hours or less.
• No laptops or internet use.
• We provide bluebooks