This survey course provides a social science perspective on global environmental health. We will take a population health perspective by considering health outcomes and health behaviors of groups of individuals (including distribution within groups – e.g., disparities), patterns of health determinants (mainly non-medical) and policies and interventions that link the two. Students will (a) identify primary environmental causes of high burden diseases such as malaria, diarrhea, and respiratory infections; (b) examine how disease prevention behaviors reveal values for environmental quality for use in cost-benefit analyses; (c) review frameworks to empirically evaluate interventions & incentives that promote preventive behaviors; and (d) discuss key policies to control global environmental health problems based on incentives of key stakeholders. Class exercises and research project will focus on empirical aspects of course readings and use statistics (Stata).

Pre-requisite: Introductory Statistics (i.e., you understand central tendencies, can estimate descriptive statistics, and can test simple hypotheses and conduct regression analysis). We will use STATA for homework assignments.

Keywords: survey, multi-disciplinary, inter-sectoral, incentives, population health, empirical, policy.

Complementary courses: Environmental Toxicology – Meyer; Population-Environment Dynamics & Health - Pan; Population, Health, & Policy – Merli; Global Health – Whetten; Economic Analysis & Evaluation for Public Health and Environment - Jeuland

Course Instructor

Subhrendu K. Pattanayak
Professor of Public Policy & Environment
Professor of Global Health & Economics (secondary)
http://sanford.duke.edu/people/faculty/pattanayak-subhrendu-k
126 Rubenstein Hall (Sanford School)*
T: 613-9306 || subhrendu.pattanayak@duke.edu.
Office hours: Tuesdays 1:30 – 3:30 | by appointment **
(I will generally NOT be available during the morning before class or on Mon and Wed afternoons).

Teaching Assistant

Alisha Pinto
anp28@duke.edu
Office hours: Wednesdays, 11:30-1:30 |by appointment
She will lead reviews and recitation sessions on Statistics (STATA, during week 1) and micro-economics, grade homeworks, and serve as trouble-shooter-in-chief.
**READING**

There is no required text book for this course. This is a new field of work, and therefore there is no one text book that does justice to the economics and policy aspects of global environmental health. To learn, we will draw on numerous academic papers, reports published by various organizations, and interactions with scholars in this field. All readings will be available through the Sakai site.

However, I strongly recommend that you consider buying and using a copy of the following thin and cheap book. We will use portions of this in the class, and it might be the one thing that you might remember about the course long after you lose access to the electronic materials.


http://www.thelancet.com/journals/lancet/article/PIIS01406736(15)60901-1/fulltext

**COURSE OBJECTIVES**

By the end of the course, students should be able to ...

1. define environmental health in the context of public health, conservation & development policy,
2. develop an annotated bibliography of 50 or more key papers, books and reports in this field
3. clarify the role of economics for identifying the key actors and for evaluating and designing policy solutions,
4. apply statistical methods to examine the empirical bases of environmental health puzzles, particularly so you can value environmental quality and evaluate health behavior interventions
5. write a paper that draws on 1-4 to describe a concrete empirical application.

**COURSE REQUIREMENTS**

**Class Participation**

Class participation is encouraged. Participation will affect your final grade: outstanding classroom participation may raise your final grade by a notch and failure to attend and participate in class discussions may lower your grade a notch. Generally, participation entails:

- Preparing for class – carefully review suggested reading materials
- Contributing to class discussions - state your opinion, reference & support it. Note, your participation should help move discussion to greater depth, crystallize an idea, show original thinking and/or motivate others to think differently.

- Blog and comment on other blogs

**Problem Sets**

Three problem sets will be assigned throughout the term (see schedule below). These problem sets will provide practice with the empirical methods used for evaluations in global environmental health analysis. *You may work with other students on the early stages of the problem sets, but the work you hand in must be your own.*
One of the problem sets will involve extensive group work so that you can conduct a **meta-analysis**. As a group, you will conduct a meta-analysis on adoption of averting behaviors to reduce environmental health risks – e.g., use of toilets, taps, bed nets, and improved cook stoves. The class will be divided into groups, whose size and number will depend on the final class size (after drop/add). Each group will identify and study at least 15 empirical studies on adoption of environmental health interventions that use household level data and statistical analysis of adoption behavior as a function of 10 or more variables. The group will then jointly code the data so that you can (a) summarize the key determinants of behavior change, (b) identify important knowledge gaps, and (c) comment on potential research topics and policy solutions. You will be given an example meta-analysis from a related field. To the extent possible, each group is expected to work using the wiki-tool in Sakai.

**Blog entries and Comments**

Once (or twice, depending on the final class size) during the semester, you will submit a 500 word blog entry on the readings for the class ONE day (11AM) prior to the class. A blog entry should include a brief summary of key points, things you didn't know or agree with, empirical quality etc. Each participant is expected to use the blog-tool in Sakai. No more than 2 people can submit a blog per class. Your classmates will have access to the material and can offer further reactions. If you are not a designated blogger, you are strongly encouraged to offer a 100 word commentary on the blogs or the articles for each class. The bloggers and the commentators should draw on popular media – podcasts, blogs, op-eds – to offer additional insights. I am prepared to assign dates to people, unless someone really cares about the specific topic they wish to write on. If so, please scan the reading schedule to identify the topic as soon as possible and email Alisha. If it becomes too hard to match bloggers and topics, I will assign to solve the coordination problem.

**Term Paper**

This is the most significant diagnostic for the course. It is a capstone in the sense that it draws on all the course material (including 3 problem sets) and comes at the end of the course so that you can synthesize what you have learnt. The topic can be either one that is already on the syllabus or a different one, as long as it pertains to global environmental health. You should plan to conduct an empirical investigation using primary or secondary data and the methods employed in class assignments. Suggestions for data will be provided on Sakai.

1. Select a topic that you would like to research in more depth. Read a minimum of 5 refereed publications on the topic. You can also read non-refereed publications, but you must read at least 5 refereed publications. Develop an annotated bibliography of these publications, which includes an abstract and summary of the knowledge gaps that can be addressed with data analysis. Explain in 1 page what aspect of environmental health you wish to study, why this is an important issue, what data might you use, and what you will be able to say about policy and program design.

   a. **Draft with annotated bibliography of 2 publications + preliminary ideas:** Sep 19 (Thurs)
   b. **Revised draft with annotated bibliography of 2 publications + preliminary ideas:** Oct 3 (Thurs)

2. Describe any data, analysis methods and empirical model (outcome [Y] and explanatory [X] variables) you can use to address this knowledge gap. **Deadline for data description:** Nov 7 (Thurs)
3. Present your review, data, and analysis and conclusions to the class: Nov 12, 17, & 19. The presentation slide deck must address the following questions. (a) Why is your topic important? (b) What has already been done? (c) What data did you bring to the topic? (d) What were your main findings and (e) Do these findings lead you to recommend any policies & programs? You are strongly encouraged to draw on your problem sets to include maps, figures, literature syntheses, and regressions in your paper.

4. Submit a written term paper by Dec 2 (Mon).

**Grading Weights & Due Dates**

The following weights will be used as the starting point for determining each student's final grade in the course:

<table>
<thead>
<tr>
<th>Weights</th>
<th>Diagnostic</th>
<th>Dates</th>
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<tbody>
<tr>
<td>10</td>
<td>Participation</td>
<td>...everyday</td>
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<tr>
<td>30</td>
<td>Problem sets</td>
<td>Sep 8 – graphics &amp; simple regressions</td>
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<td></td>
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<td>Sep 24 – meta-analyses &amp; meta-regressions</td>
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<td>Oct 15 – Evaluation &amp; more graphics</td>
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<tr>
<td>10</td>
<td>Blogs</td>
<td>...schedule determined during week1</td>
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<tr>
<td>25</td>
<td>Term paper</td>
<td>Sep 17 – topic + biblio draft I</td>
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<td>Oct 6 - topic + biblio draft II</td>
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<td>Nov 5 – data &amp; model description</td>
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<td>Nov 12, Nov 17, Nov 19 - oral presentation</td>
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<td>25</td>
<td>Final Exam?</td>
<td>Graduate reading period (take home)</td>
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<td>100</td>
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**Honor Code**

All student activities, including those in this course, are governed by the Duke Community Standard, which states:

*Duke University is a community dedicated to scholarship, leadership, and service and to the principles of honesty, fairness, respect, and accountability. Citizens of this community commit to reflect upon and uphold these principles in all academic and nonacademic endeavors, and to protect and promote a culture of integrity. Students affirm their commitment to uphold the values of the Duke University community by pledging to uphold the Duke Community Standard:*

- I will not lie, cheat, or steal in my academic endeavors;
- I will conduct myself honorably in all my endeavors; and
- I will act if the Standard is compromised.

Please note: although students are allowed to collaborate on problem sets with other students who are currently enrolled in the course, obtaining solutions from students who took the course previously or passing on solutions to other students who are not currently enrolled in the course are both considered violations of the Duke Community Standard.
**ENV 538 (PPS 582, GLHLTH 538) Fall 2015**  
Global Environmental Health: Economics & Policy  
*please read the fine print: readings highlighted in yellow or gray are v. likely to change; guest lectures will also likely move around on the schedule*

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**DETAILED READING LIST**

**Tue, Aug 25. Introduction: Course Logistics, Philosophy & Examples**


**Thu, Aug 27. Environmental Health: Burden of Disease**

- [http://www.ted.com/talks/hans_rosling_shows_the_best_stats_you_ve_ever_seen.html](http://www.ted.com/talks/hans_rosling_shows_the_best_stats_you_ve_ever_seen.html)

**Tue, Sep 1. Environmental Health: Epidemiological Transitions**


**Thu, Sep 3. Diarrhea ...**


**Tue, Sep 8 Respiratory Infections**


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Thu, Sep 10. Malaria


Tue, Sep 15 Nutrition ...


Thu, Sep 17. Climate Change & Migration


Tue, Sep 22. Planetary Health & Implementation Science


Thu, Sep 24 Behavior, Health & the Environment


Tue, Sep 29 HPF applications: Sociology & Psychology


Thu, Oct 1. Communities


**Tue, Oct 6: Markets**


**Thu, Oct 8: Donors**


Papers on EBA

**Tue, Oct 15: NGOs**


**Thu, Oct 31. Politicians & Bureaucrats**


**Tue, Nov 03. Re-inventing the Toilet: Laura Morrison (RTI International)**

....

**Thu, Nov 5. Non-market valuation 1.0 – Professor Marc Jeuland**


**Tue, Nov 10. Economics of Malaria: Prof Zac Brown (NCSU)**


**Tue, Nov 12. Student presentations**

**Thu, Nov 14: Student presentations**

**Tue, Nov 19: Student presentations**

**Thu, Nov 21: Donors**

**Tue, Nov 26: Scaling Up, Sustainability & Evaluations**

- Piot, P. GLOBAL HEALTH 4.0 http://youtu.be/Ysm_konUqnM
- Mangham, LJ & K Hanson, 2010. Scaling up in international health: what are they issues? Health Policy & Planning. 25: 85-96