DEPARTMENT: Environmental Health
COURSE NUMBER: EH549  SEMESTER: Fall 2014
CREDIT HOURS: 2
COURSE TITLE: Critical Analysis of Water, Sanitation, and Hygiene Research

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PHONE: 404-727-3420
SCHOOL ADDRESS OR MAILBOX LOCATION: 2037 CNR
OFFICE HOURS: By appointment

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PHONE: 404-727-4502
SCHOOL ADDRESS OR MAILBOX LOCATION: 2019 CNR
OFFICE HOURS: By appointment

BRIEF COURSE DESCRIPTION
This seminar covers new and emerging topics in water, sanitation, and hygiene (WASH) research. Through reading of current literature, students will be exposed to different study designs and methods, theoretical approaches, and current debates among researchers. Each semester will focus on 3-4 different topics based on recent publications and topics of interest. Course work will focus on the ability to critically read and assess literature, understanding of the breadth of methods available to address WASH research topics, writing of research papers, and summaries of key findings for lay audiences. Topics include: household water treatment, sanitation, and water and climate.

LIST SCHOOL LEVEL, DEPARTMENT, AND/ OR PROGRAM COMPETENCIES

RSPH Competencies
- Use analytic reasoning and quantitative methods to address questions in public health and population-based research
- Describe environmental conditions, including biological, physical and chemical factors, that affect the health of individuals, communities and populations
- Describe the use of epidemiology methods to study the etiology and control of disease and injury in populations
- Describe behavioral, social and cultural factors that contribute to the health and well being of individuals, communities and populations
- Assess global forces that influence the health of culturally diverse populations around the world
**EH/GEH Competencies**

- Describe major environmental risks to human health ranging from the local to global scale
- Apply the principles of epidemiology to assess health effects of environmental exposures
- Appraise the environmental, behavioral and social factors that contribute to the emergence, re-emergence, and persistence of infectious diseases
- Assess the major forces that influence the health of populations around the world.
- Critique major global priorities and the reasons for their prioritization
- Critique the evidence for improving health delivery systems and health status of individuals, communities and populations around the world
- Interpret the geographic and demographic distributions and morbidities and mortality of major infections in the US and globally

**LIST LEARNING OBJECTIVES ASSOCIATED WITH THE COMPETENCIES**

- Learn to critically evaluate published literature
- Learn to compare methods and research approaches used in peer-reviewed literature
- Engage in in-depth discussion of water, sanitation, hygiene on health and development
- Develop skills of clear and concise writing and summarization of study findings
- Learn to distil messages of policy and public health importance
- Develop and refine ability to guide critical discussion on scientific relevance and public health importance

**EVALUATION**

**Class participation (25%).** This course is a journal club style seminar. Participation of all students is essential and attendance is mandatory. Absences must be cleared with the instructors in advance.

**Short writing assignments (35%).** Assignments will be given approximately every two weeks.
- Write a paper abstract (10%). Students will be required to read a paper without the abstract and recreate the abstract. As with a paper, the abstract must be under 300 words and summarize the key findings in a way that can be understandable to a general scientific audience.
- Construct reverse outline (10%). Students will write a “reverse outline” for a paper assigned during the semester. This assignment is designed to teach students how to frame and develop a paper and understand scientific writing. The outline should detail the flow of the paper and should be limited to 2 pages.
- Fill in manuscript guideline checklists (15%). Students will use a paper that we read in class to review in-depth the checklists for manuscripts documenting three different types of studies: observational studies (STROBE guidelines), randomized trials (CONSORT guidelines), and systematic reviews (PRISMA guidelines). Three checklists x 5% each.

**Student-Led Debates (20%).** Small groups of students will debate the merits of selected WASH intervention policies based on the strength of the evidence. Proposed interventions will be assigned or approved by the instructors. Students will be expected to identify, summarize and critically assess the evidentiary support for and against the intervention in the context of a policy briefing for other students. Opposing teams will challenge and rebut the other’s evidence. While this is a group assignment, each student will be evaluated independently. Other students are expected to attend and participate in the debates by listening, questioning and ultimately voting on the policy.
EVALUATION continued

Final project (20%)
- Written Peer Review of a Scientific Article: Critique a published scientific article as if you were the peer-reviewer. Students will use the critical reading and assessment skills developed in class to critique the findings of a journal article in the field of WASH, identifying both the strengths and shortcomings of the paper and suggesting edits and changes to the research as presented.

PREREQUISITES
None.

ENROLLMENT
Limited to 20 students due to seminar nature of class

BACKGROUND READING
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Reading</th>
<th>Assignment Due</th>
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<tbody>
<tr>
<td>Aug 29</td>
<td>*Dr. Levy out of town</td>
<td>Greenhalgh 1997a</td>
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<td></td>
<td>INTRODUCTION</td>
<td>Greenhalgh 1997b</td>
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<td>Welcome, Introductions, Review of Syllabus</td>
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<td></td>
<td>Discussion of how to critically read a scientific paper</td>
<td>Elwood, Chap 1-3, 9</td>
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<tr>
<td>Sept 5</td>
<td>*Dr. Levy out of town</td>
<td>Chiller et al. 2006</td>
<td>Abstract</td>
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<td>MODULE 1: INTERVENTION STUDIES</td>
<td>Luby et al. 2008</td>
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<td>Intro to Module 1</td>
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<td>Intervention studies generally</td>
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<td>Point-of-Use interventions</td>
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<td>Sept 12</td>
<td>DuPreez et al. 2011</td>
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<td>Blinding and objective outcomes of WASH interventions</td>
<td>Boisson et al. 2013</td>
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<td>Sept 19</td>
<td>Before-After Control (BAC)</td>
<td>Fill in CONSORT checklist</td>
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<td>Led by Dr. Joe Brown. *Dr. Levy &amp; Clasen out of town</td>
<td>Kolahi et al. (2009)</td>
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<td>Sorvillo F (1994)</td>
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<td>Sept 26</td>
<td>*Dr. Clasen out of town</td>
<td>Vujcic et al. 2014</td>
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<td>MODULE 2: OBSERVATIONAL STUDIES</td>
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<td>Oct 3</td>
<td>*Dr. Clasen out of town</td>
<td>Eisenberg et al. 2006</td>
<td>Reverse Outline</td>
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<td>Cross-sectional studies</td>
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<td>Oct 10</td>
<td>Cohort studies</td>
<td>Arnold et al. 2010</td>
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<td>Arnold et al. 2009</td>
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<td>Oct 17</td>
<td>Ecological studies</td>
<td>Fink et al. 2011</td>
<td>Fill in STROBE checklist</td>
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<td>Manesh et al. 2008</td>
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<td>Oct 24</td>
<td>*Dr. Clasen out of town</td>
<td>Kolstad &amp; Johansson 2011</td>
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<td>MODULE 3: SYSTEMATIC REVIEWS</td>
<td>Philippsborn et al. in review</td>
<td>Fill in PRISMA checklist</td>
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<td>Climate &amp; diarrheal diseases</td>
<td>Greenhalgh 1997c</td>
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<td>Oct 31</td>
<td>WASH and diarrhoea</td>
<td>Engell &amp; Lin 2012</td>
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<td>Wolf et al. 2014</td>
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<td>Nov 7</td>
<td>WASH and worms</td>
<td>Struntz et al. 2014</td>
<td>Readings for first debate</td>
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<td>WASH and nutrition</td>
<td>Dangour et al. 2013</td>
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<td>Discussion of Peer Review process</td>
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<td>Nov 14</td>
<td>*Dr. Levy out of town</td>
<td>TBA</td>
<td>Readings for second debate</td>
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<td>Nov 21</td>
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<td>Readings for final debate</td>
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<td>Nov 28</td>
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<td>Dec 5</td>
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<td>Dec 12</td>
<td><strong>FINAL ASSIGNMENT DUE</strong></td>
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Required Reading List


INTRODUCTION


MODULE 1: INTERVENTION STUDIES


MODULE 2: OBSERVATIONAL STUDIES


**MODULE 3: SYSTEMATIC REVIEWS**


**MODULE 4: STUDENT-LED DEBATES**

TBA

**GUIDELINES**
