

Syllabus

Department of Environmental and Global Health
College of Public Health & Health Professions
University of Florida

Occupational & Environmental Health in Agricultural Settings

PHC 6346

Fall Semester, 2013, 3 credit hours

Times: Thursday, 8:30am – 11:30 am

Room: HPNP G110

Instructors

Song Liang, PhD (songliang@ufl.edu)

Phone: 352-273-9203

Office hours: via appointment

Course Description

This intermediate level course is intended for graduate students and health professionals. The purpose of the course is to introduce students to major environmental and occupational hazards in agricultural settings in both developed and developing countries, their epidemiology and associated disease burdens, and approaches to field investigation. The course combines lectures, discussions, and a class project.

Course Objectives

Upon successful completion of the course, students should be able to:

1. Assess the public health disease burden of key environmental and occupational hazards in agricultural environments;
2. Characterize the major environmental and occupational hazards in agricultural environments in both developed and developing countries, their epidemiology, impacts on different populations, and approaches to prevention;
3. Explain rural-urban disparities and interactions for key environmental and occupational hazards;
4. Explain concepts and applications of risk assessment for environmental and occupational hazards;
5. Identify and explain individual and community susceptibility factors that heighten the risk for population from environmental and occupational hazards;
6. Gain a perspective on how to build and evaluate evidence on environmental hazards in resource poor setting (e.g. developing countries)

Prerequisite PHC6313 (Environmental Health Concepts), or consent of the instructors

Course Materials*

Donham, KJ. And Thelin A. (eds 2006). Agricultural Medicine: Occupational and Environmental Health for the Health Professions. Blackwell Publishing

and specific readings

**the book is recommended but not required*

Assignments/Evaluation/Grading

Midterm: 25% of grade
Class project
 a. Presentation: 20% of grade
 b. Written report: 40% of grade
Participation: 15 % of grade

Class Project

Each student will be required to undertake an individual project relevant to an environmental and/or occupational health issue related to agricultural settings. Projects may involve original research (e.g. a study involving data collection and analysis; *check with instructors if a research project is envisioned that will involve human subjects*), analysis of secondary (including published) data, or may provide an in-depth review of an environmental and/or occupational health issues and its control. The project should define a clear research question and study design. Each student will need to present his/her class project. The presentation should be prepared in Power Point format and limited to 20 minutes (15 minutes for the presentation and 5 minutes for questions and answers). The final report should be doubled-spaced and within a 20-page limit, and follow a standard journal manuscript format (e.g. Introduction, Materials and Methods, Results, Discussion and/or Conclusions, References). The final written report is due on the presentation date.

Exams

Midterm will test students' grasp of key knowledge and principles covered in class and application of such knowledge to public health practices. The exams will include multiple-choice and fill-in-the-blank questions. The midterm is closed book exams and are not cumulative (i.e. the final exam will be based on materials covered since the midterm).

The grade conversion is as follows:

Percentage or points	93%-100%	90%-92%	87%-89%	83%-86%	80%-82%	77%-79%	73%-76%	70%-72%	67%-69%	63%-66%	60%-62%	Below 60%
Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E

Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E	WF	I	NG	S-U
Grade Points	4.0	3.67	3.33	3.0	2.67	2.33	2.0	1.67	1.33	1.0	0.67	0.0	0.0	0.0	0.0	0.0

For greater detail on the meaning of letter grades and university policies related to them, see the Registrar's Grade Policy regulations at:

<http://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Class Schedule

Introduction

- Aug 22 (a) Course overview
 (b) Overview of environmental and occupational health
 (c) Literature review

Readings:

1. Corvalán C, Hales S, McMichael AJ, Millennium Ecosystem Assessment (Program), World Health Organization. Ecosystems and human well-being : health synthesis. Geneva, Switzerland: World Health Organization; 2005. (*read page 11-26*)
2. Eberhardt MS, Pamuk ER. The importance of place of residence: examining health in rural and nonrural areas. *Am J Public Health.* 2004; **94**(10): 1682-6.
3. Tilman D, Fargione J, Wolff B, D'Antonio C, Dobson A, Howarth R, et al. Forecasting agriculturally driven global environmental change. *Science.* 2001; **292**(5515): 281-4.

Assembling the Toolkit

- Aug 29 (a) Introduction to global disease burden
 (b) Environmental burden of diseases

Readings:

1. Carlton EJ, Liang S, McDowell JZ, Li HZ, Luo W, Remais JV. Regional disparities in the burden of disease attributable to unsafe water and poor sanitation in China. *B World Health Organ.* 2012; **90**(8): 578-87.
2. Prüss-Üstün A, Corvalán C, World Health Organization. Preventing disease through healthy environments : towards an estimate of the environmental burden of disease. Geneva, Switzerland: World Health Organization; 2006. (Chapter 4: Methods) (http://www.who.int/quantifying_ehimpacts/publications/preventingdisease.pdf)
3. Smith KR, Corvalan CF, Kjellstrom T. How much global ill health is attributable to environmental factors? *Epidemiology.* 1999; **10**(5): 573-84.

- Sept 5 (a) Introduction to environmental and occupational epidemiology
 (b) Risk assessment

Readings:

1. Blumenthal UJ., Fleisher JM, Esrey SA, Peasey A. Epidemiology: a tool for the assessment of risk. In *Water Quality: Guidelines, Standards and Health: Assessment of Risk and Risk Management for Water-Related Infectious Disease.* World Health Organization.2001, IWA Publishing. (http://whqlibdoc.who.int/publications/2001/924154533X_chap7.pdf)
2. Haas C, Eisenberg JNS. Risk Assessment. In *Water Quality: Guidelines, Standards and Health: Assessment of Risk and Risk Management for Water-Related Infectious Disease.* World Health Organization.2001, IWA Publishing. (http://whqlibdoc.who.int/publications/2001/924154533X_chap8.pdf)

3. Spear RC, Liang S. Exposure assessment notes (to be provided)

Sept 12 (a) Risk assessment (*cont'd*)

Readings:

1. World Health Organization, Food and Agriculture Organization of the United Nations. Risk assessment of *Listeria monocytogenes* in ready-to-eat foods : interpretative summary. Rome Geneva, Switzerland: Food and Agriculture Organization of the United Nations; World Health Organization; 2004.
(<http://www.who.int/foodsafety/publications/micro/en/mra4.pdf>)
[Read parts 4 and 5, page 7-20]

Sept 19 (a) General environmental hazard in agricultural settings
(b) Physical factors affecting health in agricultural settings

Readings:

1. Donham KJ, Thelin A. Chapter 7, General environmental hazards in agriculture. In Donham, KJ. And Thelin A. (eds 2006). Agricultural Medicine: Occupational and Environmental Health for the Health Professions. Blackwell Publishing
2. Thelin A, Donham KJ. Chapter 9, Physical factor affecting health in agriculture. In Donham, KJ. And Thelin A. (eds 2006). Agricultural Medicine: Occupational and Environmental Health for the Health Professions. Blackwell Publishing
3. Beckett WS, Chamberlain D, Hallman E, May J, Hwang SA, Gomez M, et al. Hearing conservation for farmers: source apportionment of occupational and environmental factors contributing to hearing loss. *J Occup Environ Med.* 2000; **42**(8): 806-13.
4. Nelson DI, Nelson RY, Concha-Barrientos M, Fingerhut M. The global burden of occupational noise-induced hearing loss. *Am J Ind Med.* 2005; **48**(6): 446-58.

Environmental and Occupational Health Issues on the Local Scale

Sept 26 (a) Health effects of agricultural pesticides
(b) Cancer in agricultural populations

Readings:

1. Alavanja MC, Samanic C, Dosemeci M, Lubin J, Tarone R, Lynch CF, et al. Use of agricultural pesticides and prostate cancer risk in the Agricultural Health Study cohort. *Am J Epidemiol.* 2003; **157**(9): 800-14.
2. Bouchard MF, Chevrier J, Harley KG, Kogut K, Vedar M, Calderon N, et al. Prenatal exposure to organophosphate pesticides and IQ in 7-year-old children. *Environ Health Perspect.* 2011; **119**(8): 1189-95.
3. Weichenthal S, Moase C, Chan P. A review of pesticide exposure and cancer incidence in the Agricultural Health Study cohort. *Environ Health Perspect.* 2010; **118**(8): 1117-25.

Oct 3 (a) Infectious diseases and agriculture in developed and developing countries
(b) Agricultural development, (re)emergence, and control of infectious diseases
(c) Class project discussion

Readings:

1. Jones BA, Grace D, Kock R, Alonso S, Rushton J, Said MY, et al. Zoonosis emergence linked to agricultural intensification and environmental change. *Proc Natl Acad Sci U S A*. 2013; **110**(21): 8399-404.
2. Liang S, Seto EYW, Remais JV, Zhong B, Yang CH, Hubbard A, et al. Environmental effects on parasitic disease transmission exemplified by schistosomiasis in western China. *Proc Natl Acad Sci USA*. 2007; **104**(17): 7110-5.
3. Saenz RA, Hethcote HW, Gray GC. Confined animal feeding operations as amplifiers of influenza. *Vector-Borne Zoonot*. 2006; **6**(4): 338-46.
4. West BM, Liggitt P, Clemans DL, Francoeur SN. Antibiotic Resistance, Gene Transfer, and Water Quality Patterns Observed in Waterways near CAFO Farms and Wastewater Treatment Facilities. *Water Air Soil Poll*. 2011; **217**(1-4): 473-89.

- Oct 10 (a) Rural energy use, indoor air pollution, and health effects
(b) Air pollution and infectious diseases

Readings:

1. Bruce N, Perez-Padilla R, Albalak R. Indoor air pollution in developing countries: a major environmental and public health challenge. *Bull World Health Organ*. 2000; **78**(9): 1078-92.
2. Ezzati M, Kammen D. Indoor air pollution from biomass combustion and acute respiratory infections in Kenya: an exposure-response study. *Lancet*. 2001; **358**(9282): 619-24.
3. Po JY, FitzGerald JM, Carlsten C. Respiratory disease associated with solid biomass fuel exposure in rural women and children: systematic review and meta-analysis. *Thorax*. 2011; **66**(3): 232-9.
4. Smith KR. Indoor air pollution in developing countries: recommendations for research. *Indoor Air*. 2002; **12**(3): 198-207.
5. Lin HH, Ezzati M, Murray M. Tobacco smoke, indoor air pollution and tuberculosis: a systematic review and meta-analysis. *PLoS Med*. 2007; **4**(1): e20.

- Oct 17 (a) Global burden of injury
(b) Injury epidemiology in developed and developing countries
(c) Mid-term exam

Readings:

1. Krug EG, Sharma GK, Lozano R. The global burden of injuries. *Am J Public Health*. 2000; **90**(4): 523-6.
2. Odero W, Garner P, Zwi A. Road traffic injuries in developing countries: a comprehensive review of epidemiological studies. *Trop Med Int Health*. 1997; **2**(5): 445-60.

Environmental and Occupational Health Issues on the Regional Scale

- Oct 24 (a) Human movement and health impact
(b) Rural-urban migration and infectious diseases
(c) Mid-term review
(d) Class project discussion

Readings:

1. Gong P, Liang S, Carlton EJ, Jiang Q, Wu J, Wang L, et al. Urbanisation and health in China. *Lancet*. 2012; **379**(9818): 843-52.

2. McMichael AJ. The urban environment and health in a world of increasing globalization: issues for developing countries. *Bull World Health Organ.* 2000; **78**(9): 1117-26.
3. Stoddard ST, Morrison AC, Vazquez-Prokopec GM, Paz Soldan V, Kochel TJ, Kitron U, et al. The role of human movement in the transmission of vector-borne pathogens. *PLoS Negl Trop Dis.* 2009; **3**(7): e481.

- Oct 31 (a) Water and health impacts
 (b) Water projects and water-mediated infectious diseases

Readings:

1. Brinkmann UK, Korte R, Schmidt-Ehry B. The distribution and spread of schistosomiasis in relation to water resources development in Mali. *Trop Med Parasitol.* 1988; **39**(2): 182-5.
2. Steinmann P, Keiser J, Bos R, Tanner M, Utzinger J. *Schistosomiasis and water resources development: systematic review, meta-analysis, and estimates of people at risk.* *Lancet Infect Dis.* 2006; **6**(7): 411-25.
3. Zhang J, Mauzerall DL, Zhu T, Liang S, Ezzati M, Remais JV. *Environmental health in China: progress towards clean air and safe water.* *Lancet.* 2010; **375**(9720): 1110-9.

Environmental and Occupational Health Issues on the Global Scale

- Nov 7 (a) Climate change and health impact in agricultural settings
 (b) Environmental changes and emerging infectious diseases

Readings:

1. McMichael AJ, Powles JW, Butler CD, Uauy R. Food, livestock production, energy, climate change, and health. *Lancet.* 2007; **370**(9594): 1253-63.
2. McMichael AJ, Woodruff RE, Hales S. Climate change and human health: present and future risks. *Lancet.* 2006; **367**(9513): 859-69.
3. Patz JA, Graczyk TK, Geller N, Vittor AY. Effects of environmental change on emerging parasitic diseases. *Int J Parasitol.* 2000; **30**(12-13): 1395-405.
4. Yang K, LeJeune J, Alsdorf D, Lu B, Shum CK, Liang S. Global distribution of outbreaks of water-associated infectious diseases. *PLoS Negl Trop Dis.* 2012; **6**(2): e1483.

- Nov 14 (a) Globalization and health impacts
 (b) Agro-food trade and food safety
 (d) Class project discussion

Readings:

1. Convertino M, Liang S. *Probabilistic supply-chain risk model for food safety in the global agro-food trade network.* 2013 (under review, to be provided)
2. Kilpatrick AM. *Globalization, land use, and the invasion of West Nile virus.* *Science.* 2011; **334**(6054): 323-7.
3. Loewenson R. Globalization and occupational health: a perspective from southern Africa. *Bull World Health Organ.* 2001; **79**(9): 863-8.

- Nov 21 Work on class projects

Nov 28	No class (holiday)
Dec 5	(a) Class project presentation (b) Class project report due

Exam Proctoring Service

The online MPH program will be using ProctorU for online proctoring services for the exams in this course. This service will be used by all students taking this course online, regardless of whether you are an on-campus student or not. You can access ProctorU at www.proctoru.com. Detailed guidelines for this proctoring system are available on your course website. Below is a short overview, please view the “Taking Exams” file in your online course site.

- Students are REQUIRED to have a microphone and webcam in place during the test-taking period.
- Students will NOT be allowed to take an exam without a webcam.
- Students must register for a time slot for their course exams with ProctorU starting the second week of the semester, but no later than 3 days prior to an exam.
- Exams will be administered 9:00AM – midnight (Eastern time), seven days a week – exams will CLOSE at the posted time in the course – do NOT schedule an exam appointment with ProctorU that will take you past this time, even if they allow it, i.e. do NOT sign up for an appointment at 11:00PM on the last day of the exam as the exam will close at 11:55PM and your exam time will only be 55 minutes versus the time allotted in the course for the exam.
- Exams scheduled for AFTER midnight (Eastern US time) will not have access to program assistance during your exam – it is highly recommended that you take your exams ONLY during the time of 9AM-midnight Eastern US time
- No one is allowed in the room with you while you take your exam, so be sure to make proper arrangements.
- The proctor will ask you for two forms of picture ID and may ask some public record questions to identify yourself
- Please plan on 1-hour beyond the test taking time for interfacing with ProctorU

Proctoring fees are prepaid. For exams scheduled less than 3 days before an exam, ProctorU will charge a \$5 US for late fee, which will be the student’s responsibility to pay.

Academic Integrity

Students are expected to act in accordance with the University of Florida policy on academic integrity (see Student Conduct Code, the Graduate Student Handbook or these web sites for more details:

<http://www.dso.ufl.edu/sccr/honorcodes/conductcode.php>

<http://www.dso.ufl.edu/studenthandbook/studentrights.php>

<http://gradschool.ufl.edu/students/introduction.html>

Cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable

behavior.

*We, the members of the University of Florida community,
pledge to hold ourselves and our peers
to the highest standards of honesty and integrity.*

Policy Related to Class Attendance

As an online asynchronous course there is no classroom attendance required. Student participation in the course site is tracked by the Sakai system and may be referenced in regards to student participation and course advancement.

Policy Related to Make-up Exams or Other Work

Make-up Work

The expectation of this course is that you will view all lectures, read all reading assignments and complete assessments and assignments according to the syllabus schedule. Personal issues with respect to class participation or fulfillment of course requirements will be handled on an individual basis.

Accommodations for Students with Disabilities

If you require accommodation because of a disability, you must first register with the Dean of Students Office (<http://www.dso.ufl.edu/>). The Dean of Students Office will provide documentation to you, which you then give to the instructor when requesting accommodation. The College is committed to providing reasonable accommodations to assist students in their coursework.

Counseling and Student Health

Students may occasionally have personal issues that arise in the course of pursuing higher education or that may interfere with their academic performance. If you find yourself facing problems affecting your coursework, you are encouraged to talk with an instructor and to seek confidential assistance at the UF Counseling & Wellness Center, 352-392-1575. Visit their web site for more information: <http://www.counseling.ufl.edu/>.

The Student Health Care Center at Shands is a satellite clinic of the main Student Health Care Center located on Fletcher Drive on campus. Student Health at Shands offers a variety of clinical services, including primary care, women's health care, immunizations, mental health care, and pharmacy services. The clinic is located on the second floor of the Dental Tower in the Health Science Center. For more information, contact the clinic at 392-0627 or check out the web site at: www.health.ufl.edu/shcc

Crisis intervention is always available 24/7 from:

Alachua County Crisis Center:

(352) 264-6789

<http://www.alachuacounty.us/DEPTS/CSS/CRISISCENTER/Pages/CrisisCenter.aspx>

