Course Syllabus:

Introduction to Environmental and Occupational Health
Semester1: 2016
Haifa University School of Public Health
Global Health Leadership and Administration Program
Haifa, Israel

A. Course Introduction:

The field of environmental and occupational health is inter-disciplinary and broad. We will provide the students with a broad overview of the core topics of environmental and occupational health including toxicological concepts (source, exposure pathway, route of absorption, target organ, dose-response, susceptibility and effect), use of epidemiologic tools (sentinel events, relative and attributable risk, case-control studies, prospective cohort, cross-section, and time-series methods), and significance of major environmental exposures (ambient air and water pollution), and occupational exposures (gasses, metals, pesticides, and ionizing radiation). The course will focus on global environmental and occupational health problems and how policy, politics and leadership can impart a positive health impact on global communities.

In addition to the core topics listed above, we will discuss some of the societal aspects of environmental and occupational health including international disparities in disease incidence, impact of environmental exposures on susceptible populations, environmental and occupational health legislation, ethics and advocacy. We will practice critical review of the epidemiological literature and apply the concepts discussed in the course to real-world environmental and occupational public health hazards.

B. Course Schedule:

Lecture hours- Thursday09:15 – 10:45 Office hours- Thursday before or after class; Wednesday morning, or by appointment

C. Course Website: http://1drv.ms/1EM7bP4

D. Course Instructor:

Yonah (Eric) Amster MD MPH (Course Coordinator) Email: eamster@post.harvard.edu
Cell: 054-356-5855

Yonah is an epidemiologist and physician specializing in environmental and occupational medicine. He studied environmental and occupational health at the Harvard School of Public Health where he completed an MPH and post-doctoral training in environmental epidemiology. He came to Israel on a Fulbright Scholars grant. His research interests include

air pollution, heavy metal exposure and the built environment. He is currently head of the department of Environmental and Occupational Health at the University of Haifa School of Public Health

E. Lecture Topics:

Lecture	Topics	Readings
1	Introduction to Environmental Health 1. Overview of core topics (toxicology, exposure assessment, epidemiology, air pollution, water pollution) --- Introduction to Occupational Health 1. Overview of core topics (industrial hygiene, occuppational injuri and illnessness, occupational health and safety) 2. Discuss common occupational exposures and illnesses	Chapter 1 Chapter 2
2	Exposure Assessment 1. Describe the exposure hierarchy 2. Review various types of environmental and occupational exposures and different methods to measure exposures	Chapter 26
3	Introduction to Environmental and Occupational Epidemiology 1. Review common epidemiological methods in EOH 2. Discuss common sources of bias and error in environmental and occupational epidemiology 3. How to read and analyze environmental and occupational epidemiology literature	Chapter 24
4	Introduction to toxicology 1. Understand the relationship between mechanistic, descriptive, an regulatory toxicology 2. Understand dose response curves and the difference between threshold and linear response 3. Understand the relationship between toxicology and the precautionary principle	Chapter 25
5	Chemical Hazards 1. Review of common occupational and environmental chemical hazards including solvents, metals, and persistant organic pollutants 2. Discuss common routes of exposure and related health effects -	Chapter 11
6	Physical Hazards- Noise, vibration, temperature, radiation 1. Describe basic physiology of exposure to physical hazards 2. List illnesses associated with exposure to physical hazards 3. Discuss prevention and engineering controls of physical hazards 4. Briefly describe differences between ionizing and non-ionizing	Chapter 12

	radiation	
7	Water Pollution 1. Identify common sources of water pollution. 2. Discuss common routes of exposure and related health effects of acquatic toxins	Chapter 8
8	Indoor and Ambient Air Pollution 1. Discuss the global burden of disease attributed to air pollution 2. Identify primary pollutants to the indoor and outdoor environments List associated health effects from O3, NOx, SO_2, and PM	Chapter 6 Chapter 7
9	Natural Disasters 1. Learn about the environemntal and public health impacts of natural disasters. 2. Discuss the specific vulnerabilites in the developing world 3. Analyze case studies in international responses to natural disaster	
10	Built Environment: Transportation and Health 1. Describe the current epidemiology of road trauma in terms of use exposure and risk for all road users. 2. Describe the role of the public health professional in assessment and prevention in urban and rural environments --- Climate Change 1. Discuss the potential mechanism of effect the changing global environment has on human health outcomes.	Chapter 39
11	Pediatric Environmental Health and Vulnerable Populations 1. Recognize the physiological and developmental aspects which pose children at risk for environmental exposures. 2. Recognize routes of exposures to children Learn preventative practices	Chapter 4
12	Environmental Health Policy 1. Understand how toxicological data (NOAEL, LOAEL) is used to develop drinking water standards 2. Understand the relationship between air pollution standards and epidemiologic findings regarding the health effects of air pollutio 4. Understand how human biomonitoring can inform environmental health policy	Chapter 3
13	International Environmental and Occupational Health 1. Discussion of case studies in international EOH 2. Occupational hazards in the developing world 3. Apply lessons learned from past failures and successes	
14	Ethics and advocacy 1. Review case scenarios in ethical conflicts common in occupation and environmental health 2. Discuss problem solving conflicts of interests 3. Advocating for environmental and occupational safety and health Course Conclusion—what next?	Chapter 30 Chapter 31

	1. Review of main course topics 2. Discuss educational and job opportunities in OEH (research, advocacy, prevention, clinical)	

F. Course Textbook:

- **Levy B, Wegman D, Baron S, Sokas R. Occupational and Environmental Health. 6th edition. Lippincott, Williams & Wilkins. 2011. (Suggested readings listed)**
- Frumkin, P. Environmental Health: From Global to Local. 2nd ed. Wiley & Sons. 2010. (Recommended additional reference)

G. Grading:

The goal of the course is to go beyond simple memorizing of facts related to environmental and occupational health. Students will also practice critical review of the public health literature and application of the concepts discussed in the course to actual public health issues. The students will also be asked to complete an interactive on-line module on how to assess cases of environmental exposure, as an introduction to environmental medicine. To this end the course grade will be based on three items:

- 10% Complete on-line module "Approaching Cases of Environmental Exposure"http://www.acmt.net/Environmental_Modules_Gateway.html
- 25% 15-minute oral critique of environmental/occupational epidemiology paper
- 65% Multiple choice final exam.