Course Title: Global Noncommunicable Disease and Environmental Factors

Course Number: ENOH 0601

Course Location: SPH Room 306

Course Date & Time: Tuesday 6:10 PM – 9:00 PM

Course Instructor: Qingyu Meng, Ph.D.

Assistant Professor

Department of Environmental and Occupational Health

Rutgers School of Public Health, Room 311

(732-235-9754; MengQi@sph.rutgers.edu)

Office Hours: Before and after class, and by appointment

Course Assistant: NA


Additional/Supplemental Readings/Resources: Reading materials will be distributed in class.

Course Description: Topics central to global noncommunicable diseases (NCD) and risk factors are addressed. NCDs significantly contributing to global disease burdens are discussed in depth. Emerging global environmental risk factors are illustrated.

Selected Department Competencies Addressed: Each Department identifies competencies for each degree offered. The competencies addressed in this course for the MPH for the Department of Environmental and Occupational Health include:

- Describe the major environmental health problems to the general public as well as specific communities within that population;
- Describe the federal and state regulatory programs that relate to environmental (community) and worker (occupational) protection;
- Develop a testable model of environmental exposures (one or more agents) and adverse health outcomes (causing injury, disability, other measure of morbidity or mortality); and
- Specify current environmental risk assessment approaches and methods for a particular hazard or risk in a community.
The competencies addressed in this course for the PhD for the Department of Environmental and Occupational Health include:

- Explain the importance of differences of susceptibility and vulnerability to environmental toxicant/toxins based upon age, gender, race, ethnicity, genetics and socioeconomic status in different populations;
- Provide an informed expert opinion to government and/or community leaders regarding the extent or level of risk associated with a particular environmental or occupational hazard or condition;

The competencies addressed in this course for the DrPH for the Department of Environmental and Occupational Health include:

- Describe the direct and indirect human and ecological health and safety effects of various environmental and occupational exposure agents;
- Diagnose and apply appropriate approaches for assessing, preventing, and controlling environmental hazards that pose risks to health and safety;
- Provide an informed expert opinion to government and/or community leaders regarding the extent or level of risk associated with a particular environmental or occupational hazard or condition;
- Understand environmental and occupational policies and regulations at both the federal and state levels.

Please visit the Department webpages on the School of Public Health’s website at http://sph.rutgers.edu/ for additional competencies addressed by this course for other degrees and departments.

Course Objectives: By the completion of this course, students will be able to:

- Describe major noncommunicable diseases which significantly contribute to the global burden of disease
- Explain the regional differences in noncommunicable diseases around the world
- Use existing tools and database for further study on noncommunicable diseases
- Identify the key drivers of noncommunicable diseases in different regions in the world
- Critically evaluate the contributions of various environmental factors to noncommunicable disease
Course Requirements and Grading:

- Activities, assignments, projects, exams, etc. that contribute to course grade, and the respective point/percentage value of each.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Points</th>
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<tbody>
<tr>
<td>Class Participation</td>
<td>10 points</td>
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<tr>
<td>Homework 1</td>
<td>10 points (Late: -5 points/day)</td>
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<tr>
<td>Homework 2</td>
<td>10 points (Late: -5 points/day)</td>
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<tr>
<td>Homework 3</td>
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<td>Midterm Exam</td>
<td>25 points</td>
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<tr>
<td>Final Term Project</td>
<td>35 points (Late: -5 points/day)</td>
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Additional details about the course’s projects and assignments will be provided during the semester.

- Grading scale.

  A (points ≥ 90); B+ (80 ≤ points < 90); B (70 ≤ points < 80);
  C+ (65 ≤ points < 70); C (60 ≤ points < 65); F (points ≤ 59)

Course Schedule:

<table>
<thead>
<tr>
<th>Date</th>
<th>Topics</th>
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<tbody>
<tr>
<td>Lecture 1</td>
<td>Course Introduction</td>
</tr>
<tr>
<td>Jan 17, 2012</td>
<td></td>
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<tr>
<td></td>
<td>International classification of diseases and disease burden measurements</td>
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<tr>
<td></td>
<td>Noncommunicable disease in the world</td>
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<td></td>
<td>Trend of noncommunicable disease in developing and industrialized countries</td>
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<td></td>
<td>Risk factors</td>
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<td>Course logistics</td>
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Reading Material:

Lecture 2  Physiology and Toxicology of NCD (Drs. Junyan Hong and Stephan Schwander)

- Terms and definitions
- Cellular Physiology
- Cardiovascular Physiology
- Respiratory Physiology
- Renal Physiology
- Metabolic Functions of the Liver
- Toxic response to environmental stressors

Reading Material:


Homework 1 is assigned.

Lecture 3  Diabetes, obesity, and under nutrition (Dr. Daniel Hoffman)

- Nutrition requirements
- Malnutrition, over nutrition, and under nutrition
- Physiology of diabetes
- Clinical approach to diabetes
- Diabetes in the world
- Risk factors of diabetes
- The global obesity epidemic

Reading Material:


Homework 1 is due.

Lecture 4  Cardiopulmonary Disease (Dr. Robert Laumbach)

- Physiology of asthma
- Clinical approach to asthma
- Asthma in the world
- Risk factors of asthma
- Physiology of cardiovascular disease
- Clinical approach to cardiovascular disease
• Cardiovascular disease in the world
• Risk factors of cardiovascular disease

Reading Material:

Lecture 5  Cancer (Dr. Junyan Hong)

• Cancer biology
• Clinical approach to cancer

Feb 14, 2012
• Cancer in the world
• Environmental carcinogens

Reading Material:

Lecture 6  Global Mental Health (Dr. Javier Escobar)

Feb 21, 2012  Reading Material:

Feb 28, 2012  MIDTERM EXAM
Lecture 7  Climate Change

- Weather and climate
- Physics behind climate change
- Evidence for climate change
- Human activity and climate change
- The impact of climate change on global health

Mar 6, 2012

Reading Material:


Mar 13, 2012  Spring break. No class.

Lecture 8  The Atmosphere and Air Pollution

- Chlorofluorocarbons and stratosphere ozone
- Ambient air pollution in megacities around the world
- Inter-continent transport of air pollutants
- Indoor air pollution
- Tobacco and ETS exposure
- Globalization and tobacco

Mar 20, 2012

Reading Material:


Homework 2 is assigned.
Lecture 9  Catastrophes and Public Health (Dr. Michael Gochfeld)

- Catastrophes associated with climate change
- Earthquake
- Nuclear disaster
- Resource and War
- Population explosion
- The interactions between human activities and natural disaster

Reading Material:


Homework 2 is due.

Lecture 10  Water Resource and Water Pollution (Dr. Ananya Roy)

- Water resource distribution around the world
- Water contaminants and diseases
- Safe drinking water

Reading Material:


Homework 3 is assigned.

Lecture 11  Nutrition and Food Safety (Dr. Mark Robson)

- Pesticides, pesticides exposure, and health effects
- Food additives
- Genetically modified foods
- Alcohol addiction and other disorders of diet

Reading Material:


Lecture 12  Globalization, Poverty, and NCD (Dr. Ananya Roy)

- The Limits to Growth
- Poverty and inequality in a globalizing world

Apr 17, 2012
- International trade and NCD
- e-waste
- Dirty Dozen, PCBs and Dioxins in the environment
- Industrial, municipal and hazardous waste
- Chemical 'time bomb'
- Land use change, deforestation, and urbanization
- Transportation

Reading Material:


Homework 3 Presentation

In-Class Project Discussion

Apr 24, 2012 Final Term Project Presentation

Final exam is due.
School of Public Health Honor Code: The School of Public Health Honor Code is found in the student bulletin (sph.rutgers.edu/academics/catalog/index.html). Each student bears a fundamental responsibility for maintaining academic integrity and intellectual honesty in his or her graduate work. For example, all students are expected to observe the generally accepted principles of scholarly work, to submit their own rather than another’s work, to refrain from falsifying data, and to refrain from receiving and/or giving aid on examinations or other assigned work requiring independent effort. In submitting written material, the writer takes full responsibility for the work as a whole and implies that, except as properly noted by use of quotation marks, footnotes, etc., both the ideas and the works used are his or her own. In addition to maintaining personal academic integrity, each student is expected to contribute to the academic integrity of the school community by not facilitating inappropriate use of her/his own work by others and by reporting acts of academic dishonesty by others to an appropriate school authority. It should be clearly understood that plagiarism, cheating, or other forms of academic dishonesty will not be tolerated and can lead to sanctions up to and including separation from the Rutgers School of Public Health.

Policy Concerning Use of Recording Devices and Other Electronic Communications Systems: When personally owned communication/recording devices are used by students to record lectures and/or classroom lessons, such use must be authorized by the faculty member or instructor who must give either oral or written permission prior to the start of the semester and identify restrictions, if any, on the use of mobile communications or recording devices.