

## Syllabus

### ENVR 230: Issues in Environmental Health

Time of Class: 9:30 to 10:45 am Tues-Thur

Dr. L. M. Ball - [lmball@unc.edu](mailto:lmball@unc.edu)

Office Hours: 2:30 to 3:30 pm Mon, 12:30 to 2 pm Thur, or by appointment

### **Course Information**

#### **Course Identifiers**

Course Number: ENVR230

Section number: 001

Credit Hours: 3

Department: Environmental Sciences and Engineering (ENVR)

Term: Fall 2018

Times at which the class meets: 9:30 – 10:45 am Tuesday and Thursday

#### **Instructor Identifiers**

Instructor's name: L.M. Ball

Instructor's Office Location: Rosenau Hall 158, First Floor, South Corridor.

Office Hours: 2:30 to 3:30 pm Mon, 12:30 to 2 pm Thur, or by appointment

Phone number: 966-7306

Email: [lmball@unc.edu](mailto:lmball@unc.edu)

Web address: <http://www.unc.edu/~lmball/>

#### **Target Audience**

Undergraduate ENHS Majors. This course provides an introduction to the field of Environmental Health Science and to the ENHS program

#### **Course Prerequisites**

Completion of/enrollment in ENHS Science requirements:

BIOL 101/L, BIOL 201, BIOL202.

CHEM 101/L, 102/L, 261

### **Course Goals and Key Learning Objectives**

The overall goal is to familiarize students with the major environmental health problems past and present, the remedies that have been developed to mitigate environmental health problems, and the principal agencies involved (at the global, national and local levels). Building on their preparation in fundamental chemistry and biology, students will be able to describe the major environmental agents that impact human health and analyze the measures in place to protect the population against adverse health effects. This course serves as preparation for ENVR430, Health Effects of Environmental Agents, in which students will gain understanding of the mechanisms of interactions between environmental agents and living systems that will enable students to apply information derived from fundamental microbiology and toxicology studies to

assessment of the health hazards associated with exposure to environmental agents, and to predicting the adverse health effects of novel or emerging agents.

## **Competencies**

Competencies define what students should know and be able to do upon completion of their degree program. Competencies guide our curriculum planning process and serve as a measure against which student achievement is assessed. Listed below are the degree-specific competencies for the BSPH in Environmental Health Sciences (ENHS), which are addressed in ENVR 230.

### 1. Define current major issues in environmental health, sciences and engineering

Course: ENVR 230 (Fall): Issues in Environmental Health

Instructor: Louise Ball

#### **BSPH in Environmental Health Sciences**

- Demonstrate basic knowledge in the fundamental sciences and mathematics.
- Describe the relationship between public health and environmental sciences and engineering.
- Identify major issues in environmental sciences and engineering.
- Demonstrate broad knowledge in the core fields of public health.
- Demonstrate written and oral communication skills related to environmental sciences and engineering issues within a public health context.

Our curriculum also addresses the core Environmental Health Sciences competencies:

#### **Environmental Health Sciences Core Competencies**

- Specify approaches for assessing, preventing and controlling environmental hazards that pose risks to human health and safety
- Describe the direct and indirect human, ecological and safety effects of major environmental and occupational agents
- Specify current environmental risk assessment methods
- Describe genetic, physiologic and psychosocial factors that affect susceptibility to adverse health outcomes following exposure to environmental hazards
- Discuss various risk management and risk communication approaches in relation to issues of environmental justice and equity
- Explain the general mechanisms of toxicity in eliciting a toxic response to various environmental exposures
- Develop a testable model of environmental insult
- Describe federal and state regulatory programs, guidelines and authorities that control environmental health issues

## Course Requirements

Students are required to attend and participate in classes.

## Grades

There will be **6 Grading Opportunities:**

- 2 In-class Tests @ 20% covering defined material
- 1 Presentation @ 15%
- 1 Essay based on presentation @ 10 %
- 1 Final Examination @ 30% - cumulative
- Attendance and Participation @ 5%

### **Evaluation criteria for oral presentations.**

1. CONTENT(50%)
  - Significance of issue is clear
  - Assertions are backed by supporting data
  - Complexity of subject matter is handled appropriately
  - Sources are credited appropriately
2. PRESENTATION (35%)
  - Structure of presentation is developed appropriately and smoothly
  - The main points stand out
  - Attention “hooks” are not excessively cheesy
  - Graphics are clearly legible
  - Video is not used excessively
3. DELIVERY (15%)
  - Presenter makes eye contact with audience
  - Pace and volume of presentation are appropriate
  - Cues (flash cards, cheat sheets) are used discretely
  - Interaction with audience (eg answering questions) is confident

### **Grading scheme:**

The following grading scheme is used:

%	Descriptor	Grade
95 - 100	Outstanding	A
90 - 94.9	Clearly excellent	A-
85 - 89.9	Very good	B+
80 - 84.9	Good	B

75 - 79.9	Satisfactory	B-
70 - 74.9	Adequate	C+
65 - 69.9	Marginally adequate	C
60 - 64.9	Weak	D
0 – 59.9	Insufficient	F

## **Course Policies**

### **Course Resources:**

**Textbook:** None.

Material will be available on the Sakai website or through links to publicly-accessible websites.

### **Honor Code:**

The Honor Code is in effect at all times. While students are encouraged to study together, and work together on their presentations, each grading opportunity is an individual

**Time Table** – see Class Schedule below.

### **Syllabus Changes**

The management reserves the right to modify or rearrange course content in response to current events or emergencies. Any changes will be communicated to students by email and on the course Sakai site.

### **Textbooks**

The reading material for this course consists mainly of journal articles and other materials available through on-line links. There is no assigned textbook.

### **Attendance**

This class meets in person 9:30 to 10:45 am Tues-Thur. Attendance will not be formally tracked, although in such a relatively small class prolonged absence will be noticeable. I expect students to be responsible for anticipating predictable absences and making appropriate arrangements to cover course material and assignments.

See separate listing “Class Schedule” for class schedule, description of content, and reference material.

## Class Schedule

Topic	Reference Material
Introduction: What is Environmental Health	<a href="#">Environmental Health</a> <a href="http://healthyamericans.org/">http://healthyamericans.org/</a>
The major players in environmental health: International, National, Local, Non-Government	<a href="#">Major agencies/legislation</a> <a href="#">United Nations</a> ; <a href="#">UN Environmental Program</a> ; <a href="#">World Health Organisation</a> <a href="#">Careers</a> ; <a href="#">Food and Agriculture Organization</a> <a href="#">World Bank</a>  National: <a href="#">The FDA</a> ; <a href="http://www.epa.gov">www.epa.gov</a> ; <a href="http://www.usphs.gov">www.usphs.gov</a> ; <a href="#">Surgeon-General's Reports</a> ; <a href="http://www.cdc.gov">www.cdc.gov</a> ; <a href="http://www.niehs.nih.gov">www.niehs.nih.gov</a> ; <a href="http://www.usda.gov">www.usda.gov</a> ; <a href="http://www.cpsc.gov">www.cpsc.gov</a> ; <a href="#">Others</a>  Local (State/County) Environmental Health in North Carolina: <a href="#">NC Department of Health and Human Services</a> ; <a href="http://ehs.ncpublichealth.com/">http://ehs.ncpublichealth.com/</a> ; <a href="http://deq.nc.gov/">http://deq.nc.gov/</a> ; <a href="http://www.orangecountync.gov/departments/health/index.php">http://www.orangecountync.gov/departments/health/index.php</a> ; <a href="http://www.orangecountync.gov/departments/health/environmental_health.php">http://www.orangecountync.gov/departments/health/environmental_health.php</a> ; <a href="#">Mecklenburg County Air Quality</a>  Non-profit: <a href="#">Gates Foundation</a> ; <a href="http://water.org/">http://water.org/</a> Professional organizations <a href="http://www.neha.org">www.neha.org</a>
The beginnings of public health: Fighting disease John Graunt, Edwin Chadwick, John Snow.	The first biostatistician <a href="#">John Graunt</a> ; <a href="#">Table of casualties</a> <a href="#">Great Fire of London</a>  The first sanitarian <a href="#">Edwin Chadwick</a> ; <a href="#">report</a>  The first epidemiologist: <a href="#">John Snow</a> ; <a href="#">map</a> ; <a href="#">pump</a> ; <a href="#">UCLA Website</a>  Cholera: <a href="#">Sack et al., 2004</a> ; <a href="#">Lipp et al., 2002</a> : <a href="http://www.who.int/topics/cholera/en/">http://www.who.int/topics/cholera/en/</a>
The plagues of today	<a href="http://www.bbc.com/news/science-environment-37287715">http://www.bbc.com/news/science-environment-37287715</a>  Plague: <a href="http://www.cdc.gov/mmwr/preview/m">http://www.cdc.gov/mmwr/preview/m</a>

	<p><a href="http://www.mwrhtml/mm5534a4.htm">mwrhtml/mm5534a4.htm</a> <a href="#">CDC Info on the Plague</a>  <a href="http://www.livescience.com/15937-black-death-plague-debate.html">http://www.livescience.com/15937-black-death-plague-debate.html</a>  <a href="http://www.homelandsecuritynewswire.com/40-al-qaeda-terrorists-dead-after-failed-experiment-plague-weapon">http://www.homelandsecuritynewswire.com/40-al-qaeda-terrorists-dead-after-failed-experiment-plague-weapon</a></p> <p>Cholera: <a href="#">Sack et al., 2004</a>; <a href="#">Lipp et al., 2002</a> :  <a href="http://www.who.int/topics/cholera/en/">http://www.who.int/topics/cholera/en/</a></p> <p><a href="http://www.npr.org/blogs/health/2014/03/21/292225770/lack-of-working-sewers-allows-haitis-cholera-outbreak-to-persist">http://www.npr.org/blogs/health/2014/03/21/292225770/lack-of-working-sewers-allows-haitis-cholera-outbreak-to-persist</a></p> <p><a href="http://www.cnn.com/2016/08/18/health/haiti-un-cholera/">http://www.cnn.com/2016/08/18/health/haiti-un-cholera/</a></p> <p><a href="http://www.npr.org/sections/thetwo-way/2016/08/18/490468640/u-n-admits-role-in-haiti-cholera-outbreak-that-has-killed-thousands">http://www.npr.org/sections/thetwo-way/2016/08/18/490468640/u-n-admits-role-in-haiti-cholera-outbreak-that-has-killed-thousands</a></p> <p>Typhoid Fever:  <a href="http://history1900s.about.com/od/1900s/a/typhoidmary.htm">http://history1900s.about.com/od/1900s/a/typhoidmary.htm</a>  <a href="http://www.health.state.ny.us/nysdoh/communicable_diseases/en/typh.htm">http://www.health.state.ny.us/nysdoh/communicable_diseases/en/typh.htm</a></p> <p><a href="https://www.cdc.gov/nchs/data/vsushistorical/mortstatbl_1908.pdf">https://www.cdc.gov/nchs/data/vsushistorical/mortstatbl_1908.pdf</a></p> <p><a href="http://www.cdc.gov/nchs/fastats/leading-causes-of-death.htm">http://www.cdc.gov/nchs/fastats/leading-causes-of-death.htm</a></p> <p><a href="#">Causes of mortality</a></p>
Chemical exposures: Organic chemicals	<a href="#">The National Exposure Report</a>
Lead and other metals	<p><a href="#">Lead</a>  <a href="#">Needleman, 2000</a>;  <a href="#">CDC on lead</a>  <a href="#">Lead standards</a> <a href="#">Mercury</a>  <a href="http://www.nimd.go.jp/english/">http://www.nimd.go.jp/english/</a></p>

	<a href="http://www.mercuryconvention.org/">http://www.mercuryconvention.org/</a>
Water-borne diseases	Student presentations: Dengue fever Role of water filters in emergency preparedness Water quality in South Asia
Chemical hazards	Student presentations PCBs in the Hudson River GenX water contamination in Wilmington Pesticides and food
Air pollution: Health threats and legislation	<a href="http://www.epa.gov">www.epa.gov</a> ; <a href="#">Clean Air Act</a> ; <a href="#">Smog</a>
Air pollution	Student presentations Indoor air pollution Air pollution, ozone and lung health. Effects of air quality on disease.
Occupational hazards	<a href="#">Painting Radium Dials; the last survivor</a> <a href="#">Phossy Jaw</a> <a href="#">Lead Paint</a> <a href="#">Alice Hamilton Career</a> <a href="http://www.chicagotribute.org/Markers/HullHouse.htm">www.chicagotribute.org/Markers/HullHouse.htm</a>  Occupational protection: <a href="http://www.dol.gov/oasam/programs/history/perkins.htm">http://www.dol.gov/oasam/programs/history/perkins.htm</a> <a href="http://francesperkinscenter.org/">http://francesperkinscenter.org/</a> <a href="http://www.dol.gov">www.dol.gov</a> <a href="http://www.osha.gov">www.osha.gov</a> <a href="http://www.cdc.gov/niosh/">www.cdc.gov/niosh/</a> <a href="#">Health in the workplace</a>  <a href="#">International Programme on Chemical Safety</a>
Notorious accidents: Seveso, Times Beach, Bhopal,	

Chernobyl	
Local pollution issues	
<b>University Day: No class</b>	
Water: Health threats and legislation	<p> <a href="#">Cuyahoga; Photo</a> <a href="#">Randy Newman</a> <a href="#">EPA AOC</a>; <a href="#">Clean Water Act</a>  <a href="#">EPA Office of Water</a>; <a href="#">Legal definition of water</a>  <a href="#">EPA on Water</a>  <a href="#">BEACH Act</a>  <a href="#">Safe Drinking Water Act</a> <a href="#">Drinking water contaminants</a>  <a href="http://www.owasa.org/">http://www.owasa.org/</a>  <a href="http://www.cleanwaterfund.org/">http://www.cleanwaterfund.org/</a>  <a href="#">Thomasville Sewage Spill</a> , <a href="#">Lawsuit</a>  <a href="#">Yadkin Riverkeeper</a> </p> <p> <a href="#">TCE in well-water</a> <a href="#">DEQ Report</a>  <a href="#">Report</a> <a href="#">Brockovich</a> </p> <p> <a href="http://www.bbc.com/news/business-37471911">http://www.bbc.com/news/business-37471911</a> </p> <p> <a href="#">The Water Footprint of Data Centers</a> </p>
Love Canal and Superfund: Hazardous waste, waste disposal	<p> <a href="#">Powerpoint</a>  <a href="#">Lois Gibbs</a>; <a href="#">Center for Health, Environment and Justice</a> </p> <p> <a href="#">SUNY at Buffalo Love Canal Collections</a> </p> <p> <a href="http://www.health.state.ny.us/nysdoh/lcanal/lctimbmb.htm">http://www.health.state.ny.us/nysdoh/lcanal/lctimbmb.htm</a> ; </p>



[EPA Documents; Settlement with Occidental Chemical](#)

[Officially Cleaned up](#)

<http://www.cnn.com/US/9808/07/love.canal/>

[Not so fast; more lawsuits](#)

[Time's Top Ten Disasters](#)

[New York State Department of Health Studies](#)

[Valley of the Drums](#)

[Waste](#)

[RCRA; CERCLA; SARA](#)

<http://www.epa.gov/superfund/>;

<http://www.nj.gov/dep/srp/superfund/> ;

[Luminous Processes, Athens, GA](#)

[https://www.theguardian.com/cities/2016/oct/24/difficult-breathe-inside-kolkata-india-](https://www.theguardian.com/cities/2016/oct/24/difficult-breathe-inside-kolkata-india-rubbish-dump-permanently-fire)

[rubbish-dump-permanently-fire](#)

Environmental Justice	Student Presentation: Global patterns of Environmental (In)justice
Student presentations	Urban susceptibility Possible environmental causes of sarcoidosis Food deserts in the USA
Local issues – where are we now ?	
<b><u>08:00 am Final Examination</u></b>	