

# OEHS 620 Occupational and Environmental Hazard Assessment

Fall 2014

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<b>Meeting Time:</b>	Lab: Thursdays 4:30-6pm Lecture: Thursdays 6-8:30 pm
<b>Location:</b>	7608 Health Sciences South
<b>Instructors:</b>	Anna Allen, MD, MPH Assistant Professor, Occupational Medicine
<b>Lab:</b>	Heather Basra, PhD Assistant Professor School of Public Health  Brandon Takacs Assistant Professor, WVU Safety & Health Extension
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<b>Office Hours:</b>	By appointment
<b>Credits:</b>	4
<b>Types of Instruction:</b>	Lecture and Lab
<b>Grading Mode:</b>	Normal Grading Mode (A-F)
<b>Course Description:</b>	This course provides an overview of occupational and environmental hazards and occupational hazard management.
<b>Curriculum-based Rationale:</b>	Industrial hygiene concepts, ergonomics and safety principles taught in this course provide the basis for the occupational and environmental health sciences major in the School of Public Health.

**Prerequisites:** None

**Learning** By the end of this course, students will be able to:

**Outcomes:**

- 1) *Appraise* existing occupational and environmental hazards;
- 2) *Assess* the potential for problems in an occupational setting;
- 3) *Discern* appropriate methods for the control of occupational hazards; and
- 4) *Evaluate* occupational hazards and controls.

**Course**

**Required textbook:** Fundamentals of Industrial Hygiene, 6th Ed, *National Safety Council*. Publication #0670 ISBN: 978-0-87912-312-3 Copyright © 2012

**Required textbook:** Industrial Hygiene Evaluation Methods, 2<sup>nd</sup> Edition (2004): Edited by M.S. Bisesi and J. P. Kohn; Published by CRC Press, Inc. ISBN: 1-56670-595-9

**Resources:**

**Recommended textbooks:** Accident Prevention Manual for Business and Industry, Administration & Programs, 13th edition, and Accident Prevention Manual for Business and Industry, Engineering & Technology, 13th edition

**Websites:** It is recommended that everyone have access to SOLE <https://sole.hsc.wvu.edu> to be able to access data files. If you do not have an account click the ? button and follow the instructions for requesting an account.

The following websites will serve as a valuable adjunct to this class:

1. OSHA [www.osha.gov](http://www.osha.gov)
2. NIOSH [www.niosh.gov](http://www.niosh.gov)
3. EPA [www.epa.gov](http://www.epa.gov)

**Computers:** You may bring laptops/tablets/smartphones to class and they will be used for some in class activities

**You will need a scientific calculator.**

**Library:** The WVU libraries can be accessed via the following link: <http://www.libraries.wvu.edu/>

**Assignments:**

**Examinations**

Three in-class exams, in multiple choice, problems and short answer format from both lecture and lab materials, will be administered. Information from prior exams may be used on subsequent exams. A final exam, which is cumulative and take home, will also be administered. See Course Schedule below for dates.

**Homework/Participation**

Reading of the material will be expected prior to the class. Application of the online study material (discussion and group activities) and review of problems will be during class time.

**Exercises**

Lab exercises, which consist of protocols and reports will also be required. See Lab Schedule below for due dates.

## CLASS SCHEDULE\*

Lecture	Date	Subject	Chapters/ Readings	Other Resources
1	Aug 21	Discussion of syllabus History of Industrial Hygiene Introduction to Industrial Hygiene Start Anatomy/Physiology basics	1	
2	Aug 28	Anatomy and Physiology basics (Lungs, skin, ears, eyes)	2,3,4,5	
3	Sept 4	Regulations, Recommendations and Regulatory Agencies	Appendix B Ch 28-29	
4	Sept 11	Aerosols/particulates & Biological agents Exposure limits	Ch 6,8,14	www.osha.gov
5	Sept 18	<b>EXAM 1</b> Measurements and Conversions		
6	Sept 25	Toxic gases, liquids and vapors and pesticides; Explosive/Flammable substances	Ch 7	
7	Oct 2	Non-Ionizing Radiation Ionizing Radiation and radiation biology	Ch 10 Ch 11	
8	Oct 9	Noise & Vibration Hearing conservation	Ch 9 On line	www.niosh.gov
9	Oct 16	Thermal stress Ergonomics	Chp 12 Ch 13	
10	Oct 23	Guest lecture (Environmental sampling)		
11	Oct 30	<b>EXAM 2</b> Methods of control	Ch 18	
12	Nov 6	Ventilation	Ch 19-21	
13	Nov 13	Selection and Use of Respiratory Protection PPE	On line Ch 22 On line	www.osha.gov
14	Nov 20 (Football game, no in class meeting)	Hazard Control (trips, falls, machine hazards, "accidents") Hazard Communication, Wellness/Fitness Programs TAKE HOME FINAL EMAILED	Information and study guide on line	www.niosh.gov
15	Dec 4	<b>EXAM 3</b> Wrap up		
		<b>FINAL EXAM</b>		

\*The Instructor reserves the right to adjust this schedule

**Guest Lectures may be added to the schedule. Please check your**

### Laboratory

#### Text:

Laboratory Text: Industrial Hygiene Evaluation Methods, 2<sup>nd</sup> Edition (2004): Edited by M.S. Bisesi and J. P. Kohn; Published by CRC Press, Inc.  
ISBN: 1-56670-595-9

Grading Elements and Weighting:

Lab (Attendance, Participation, Assignments)	10%
Field Study	
Report	5%
Presentation	<u>5%</u>
	20%

The students will be divided into groups for the semester and the effort will be a group effort with grades based on the group performance.

Method of Instruction for the Laboratory Practice:

- The majority of the laboratory experiences are hands-on while a few experiences being demonstration (e.g. audiometric testing, spirometry, quantitative fit testing).
- The laboratory will be available for students to use from 8:00 am to 4:45 pm – Monday through Friday. (laboratory contact: \_\_\_\_\_)
- Before each laboratory experience, students are expected to read the lab textbook unit related to that week’s lab.
- Students are required to document lab notes and lab exercises in the required, laboratory notebook. The notes should include key points from lecture, methods, equipment and results of experiments.
- A Field Study topic and project will be assigned by the laboratory coordinators.
- The Field Study requires a final report. The report must consist of: a) **executive summary** of findings (maximum half of a page), b) concise and understandable **introduction** to the topic (1 page maximum), c) **methodology** (1 page maximum), d) **results** (1 page maximum in addition to data collection forms from laboratory text, graphs), and e) **conclusions** (1 page maximum).

The Field Study requires a final presentation. The presentation must summarize the assessment (background, problem and methods), results, and recommendations

**Lab: Schedule\***

Topical Schedule of Laboratories (Dates may cha):

Date (week of)	Laboratory Topic
8/21	<b>NO LAB</b>
8/28	Introduction to IH Lab -.5 hr Identification and Evaluation of Hazardous Environmental Agents & Factors <b>(Units 1 and 2)</b>
9/4	Evaluation of Pulmonary function <b>(Unit 27) – 1.5 hr</b> <b>(SPIROMETRY)</b>
9/11	Instruments Used to evaluate the Occupational Environment <b>(Unit 3)</b> Evaluation of Airborne Total Particulate & Metal Dusts and Fumes <b>(Unit 4, Unit 7):</b> Integrated Personal and Area Monitoring Using a Pump and Cassette Evaluation of Airborne Respirable Particulate <b>(Unit 5):</b> Integrated Personal and Area Monitoring Using a Pump, Cassette and cyclone
9/18	<b>EXAM 1</b>
9/25	Evaluation of Airborne Gases and Vapors <b>(Unit 12):</b> Instantaneous Area Monitoring Using a Piston or Bellows Air Sampling Pump Evaluation of Airborne Gases and Vapors <b>(Unit 9):</b> Integrated Personal and Area Monitoring Using a Pump and Solid Adsorbent Medium
10/2	Evaluation of Radiation <b>(Unit 21, 22, &amp;23)</b>
10/9	Evaluation of Heat Stress <b>(Unit 19)</b>
10/16	Evaluation of Airborne Sound Levels <b>(Unit 16&amp;17):</b> Instantaneous Area Monitoring Using a Sound Level Meter and Octave Band Analyzer Integrated Personal Monitoring Using a Dosimeter Evaluation of Personal Hearing Thresholds <b>(Unit 18)</b>

	<b>(AUDIOMETRY)</b>
10/23	Environmental Sampling / Indoor Air Quality <b>(Unit 8, 11, 13, 14, &amp; 15)</b> <b>FIELD STUDY ASSIGNMENTS</b>
10/30	<b>EXAM 2</b>
11/6	Evaluation of Air Pressure, Velocity and Flow Rate <b>(Unit 25):</b> Instantaneous Monitoring of a Ventilation System Using a Pitot Tube with Manometer and Velometer – <b>2 hr</b>
11/13	Respirator, selection, maintenance, & fit <b>(Unit 26) – 2 hr</b> <b>(PORTACOUNT)</b>
11/20	<b>NO LAB – SELF STUDY FIELD PROJECT, TBA</b>
12/4	<b>LAB FINAL REPORT &amp; PRESENTATION</b>

### **COURSE ASSESSMENT AND GRADING**

Exam 1	100	15%
Exam 2	100	15%
Exam 3	100	15%
Final	200	25%
Lab Report 1	50	4%
Lab Report 2	50	4%
Lab Report 3	50	4%
Lab Report 4	50	4%
Lab Report 5	50	4%
Homework/Participation	10	10%
<b>TOTAL</b>	<b>760</b>	<b>100%</b>

### **Grading Scale:**

A	760-684
B	683-608
C	607-532
D	531-456
F	<456

## **COURSE POLICIES**

### **Attendance, Participation, Arriving Late, Departing Early**

Attendance will be taken at the beginning of every class. All students are expected to attend and participate in ALL classes in their entirety. Arriving late and/or departing early disrupts the learning process for the rest of the class. In the rare instance that a student must depart early, she/he is to inform the instructor of such at the beginning of class. If arriving late and/or departing early becomes a consistent problem, as determined by the instructor, the instructor reserves the right to take the necessary steps to have the student removed from the class. If a student misses class, arrives late, or departs early, it is the student's responsibility to obtain a copy of all missed learning materials from a fellow student, not from the instructor.

### **Communication Devices**

The use of all communication devices (cell phones, pagers, music devices, etc.) during class time is discouraged. Any electronic device that emits sound should be placed in silent mode. There will be breaks during lecture time that will allow for time to return phone calls. If a student does not abide by this policy they will be asked by the instructor to leave the class. If a student refuses to leave the class, the instructor will follow university procedures for having the student removed from the class.

### **Use of Computers in Class**

Computers may be used in class for note taking purposes and for some exercises.

### **Food and Drinks in Classroom**

Food and drinks are allowed in the classroom as long as they are not disruptive to the learning process and students remove all items after class. The instructor reserves the right to change this policy if both of these criteria, as determined by the instructor, are not met.

### **Communication Rules**

It is fully expected that all students will interact and communicate in a professional and courteous manner towards both the instructor and fellow students. "Treating people like you want to be treated" is a good general rule to follow when interacting. Out-of-class communication with the instructor is to be done via E-mail. Every effort will be made by the instructor to respond to all student E-mail queries within 24 hours, Monday through Sunday.

### **Class Cancellation**

In the unforeseen circumstance where class is cancelled, an E-mail will be sent to all students' preferred E-mail address regarding such.

### **WVU Student Assistance**

The WVU Student Assistance Program offers an array of services for students with alcohol or other drug concerns, including individual assessment, individual and group counseling, and educational activities. Additional information regarding this important student service can be accessed via the following link: [http://well.wvu.edu/ccpps/student\\_assistance\\_program](http://well.wvu.edu/ccpps/student_assistance_program)

## **DEPARTMENT AND UNIVERSITY POLICIES**

### **Late Work and Makeup Exams**

With the exception of extenuating circumstances, as determined by the instructor, late work as well as makeup exams will not be allowed and will be given a grade of zero (0) points.

### **Incompletes**

Per Department policy, the grade of "I" (Incomplete) will be given only to a student experiencing extraordinary circumstances. Any "I" must be removed within one calendar year, yet faculty advisors may require its removal

within a shorter time period. Students receiving an “I” in this course must contact their faculty advisor to discuss its removal. If an “I” is not rectified within one year, it will change to an “F.”

### **Inclusivity Statement**

The WVU community is committed to creating and fostering a positive learning and working environment based on open communication, mutual respect, and inclusion. If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this course, please advise your faculty advisor and make appropriate arrangements with the Office of Disability Services (293-6700). For more information on West Virginia University's Diversity, Equity, and Inclusion initiatives, please see <http://diversity.wvu.edu>.

### **Academic Integrity**

The integrity of the courses offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, faculty advisors will enforce rigorous standards of academic integrity in all aspects of this course. See the Student Conduct Code at <http://studentlife.wvu.edu/studentconductcode.html> for the WVU policy on regard to acts considered to fall under academic dishonesty and possible ensuing sanctions, Should you have any questions about possible improper research citations or references, or any other activity that may be interpreted as academic dishonesty, please see your faculty advisor to discuss.

### **Evaluation of Instruction**

Effective teaching is a primary mission of WVU. Student evaluation of instruction provides the University and instructor feedback on your course experience for review and course improvement. Your participation in this evaluation is both strongly encouraged and highly valued. Results are confidential, anonymous, and not available to the instructor until after final grades are released by Admissions and Records. Information about completing the evaluation will be provided later