UNIVERSITY OF MINNESOTA
School of Public Health

The 2004 Public Health Institute

May 24 – June 11, 2004

COURSE SYLLABUS
PubH 7200-107
Hazard Recognition, Evaluation, and Control

Credits: 1.0

Course meeting times:	May 2004
Instructor:	Lisa M. Brosseau, ScD, CIH Associate Professor
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I. Course Description

This course introduces the basic concepts of Industrial Hygiene: Recognition, Evaluation, and Control, as applied to workplace hazards. The hazards addressed will include chemical, physical, and biological agents. Application will be made to the protection of workers in times of urgent threat and bioterrorism.

II. Learning Objectives

At the completion of this course, students will:

- Understand the basic properties of gases, vapors, aerosols and biological aerosols
- Distinguish between the major classes of chemical and biological exposures (gases, vapors, aerosols)
- Identify and distinguish between the major types of sampling (personal, area, direct-reading, etc.) and the variety of sampling methods used to measure exposures to gases, vapors and aerosols (including biological aerosols)
- Understand and apply the hierarchy of controls for workplace hazards
- Identify the primary control methods used to eliminate or minimize exposures to gases, vapors and aerosols
- Understand the purpose, function and design of engineering controls and personal protective equipment

III. Methods of Instruction and Work Expectations

This course combines lectures with case examples, calculations, and demonstrations. Students will be expected to spend approximately five to ten hours of readings prior to the in-class didactic and one-half hour for problem sets to each session in preparation for this course. The last session will include a group activity that synthesizes material covered throughout the course.
Grading will be base on class participation (33%), completion of problem sets (33%), and a final group project and presentation (33%).

IV. Grading

1. **Grading Criteria**: This course is offered A/F or S/N

- A/F letter grade will be determined by total effort as follows:

A = 95-100%	(4.0) Represents achievement that is outstanding relative to the level necessary to meet course requirements.
A- = 90-94%	
B+ = 87-89%	
B = 83-86%	(3.0) Represents achievement that is significantly above the level necessary to meet course requirements.
B- = 80-82%	
C+ = 77-79%	
C = 73-76%	(2.0) Represents achievement that meets the minimum course requirements.
C- = 70-72%	
D+ =	
D = 60-70%	(1.0) Achievement below minimum course expectations but sufficient to be awarded credit.
D- =	
F = below 60%	Represents failure (or no credit) and signifies that the work was either (1) completed but at a level of achievement that is not worthy of credit or (2) was not completed and there was no agreement between the instructor and the student that the student would be awarded an I.

- S/N option must complete all assignments to a C- level (70%):

S	Achievement that is satisfactory will be expected to complete all assignments and receive a minimum of 70% to receive a passing score (achievement required for an S is at the discretion of the instructor but may be no lower than a 70%).
F	Represents failure (or no credit) and signifies that the work was either (1) completed but at a level of achievement that is not worthy of credit or (2) was not completed and there was no agreement between the instructor and the student that the student would be awarded an I.

2. **Grading Option** – Students may change grading options during the initial registration period or during the first two days of the term. **The grading option may not be changed after the second day of class.**

3. **Course Incomplete** – An incomplete grade is permitted only in cases of extraordinary circumstances and following consultation with the instructor. In such cases and "I" grade will require a specific written agreement between the instructor and the student specifying the time and manner in which the student will complete the course requirements. Extension for completion of the work will not exceed one year.

4. **Scholastic Dishonesty** – This course follows the University of Minnesota Board of Regents' policy on student conduct and scholastic dishonesty which can be found at: http://www1.umn.edu/regents/policies/academic/StudentConductCode.pdf

   A grade of "F" or "N" for the entire course will be assigned for scholastic dishonesty as defined in the policy and will be reported to the Office of Student Judicial Affairs http://www.sja.umn.edu/

   Plagiarism is an important element of this policy. It is defined as the presentation of another's writing or ideas as your own. Serious, intentional plagiarism will result in an "F" or "N" grade for this course. For more information on this policy and for a helpful discussion of preventing plagiarism, please consult

University polices and procedures regarding academic integrity:
http://cisw.cla.umn.edu/plagiarism/uofmpolicies.html

Students are urged to be careful that they properly attribute and cite others' work in their own writing. For guidelines for correctly citing sources, go to http://tutorial.lib.umn.edu/. In addition, original work is expected in this course. It is unacceptable to hand in assignments for this course for which you received credit in another course unless by prior agreement with the instructor. Building on a dissertation or final project is acceptable.

If you have any questions, consult the instructor.

V. Course Withdrawal

School of Public Health Students may withdraw from a course **through the second** day of the course without permission. No "W" will appear on the transcript. After the second day, students are required to do the following:

- The student must contact and notify their advisor and course instructor informing them of the decision to withdraw from the course.
- The student must send an email to the SPH Student Services Center (SSC). The email must provide the student name, ID#, course number, section number, semester, and year with instructions to withdraw the student from the course, and acknowledgement that the instructor and advisor have been contacted.
- The advisor and instructor must email the SSC acknowledging the student is canceling the course. All parties must be notified of the student's intent.
- The SSC will complete the process by withdrawing the student from the course after receiving all emails (student, advisor and instructor). A "W" will be placed and remain on the student transcript for the course.
- After discussion with their advisor and notification to the instructor, students may withdraw until the end of the second day of class. There is no appeal process.

VI. Disabilities

Any student with a documented disability (e.g. physical, learning, psychiatric, vision, hearing, etc.) who needs to arrange reasonable accommodations must contact the instructor and Disability Services at the beginning of the term. All discussions remain confidential. For further information contact the University of Minnesota Disability Services website at http://ds.umn.edu/ or call 612-626-1333 (V/TTY).

VII. Course Text and Readings

Readings will be assigned from the following:

Required Text

Perkins, JL (1997). Modern Industrial Hygiene: Recognition and Evaluation of Chemical Agents. International Thompson Publishing Company: New York, NY.

Text on Reserve at BioMedical Library (Diehl Hall, Learning Resources Center)

American Industrial Hygiene Association, 1997. The Occupational Environment – Its Evaluation and Control. DiNardi, Ed. AIHA Press: Fairfax, VA.

VIII. Course Outline/Weekly Schedule

June 7 9:30 a.m. – 12:00 p.m.	Principles of chemical hazards (Gases, Vapors, Aerosols, Biological Aerosols). Basic Processes and their Hazards Principles of Exposures Predicting Effects of Exposure Case Examples <u>Required readings:</u> **From Perkins:** Terminology for Airborne Materials: Chapter 4, 65-86, 49-53 Properties of Gases and Vapors: Chapter 8, 166-172, 166 – App A, 177-179, 175-177 Properties of Gases and Vapors: Chapter 19, App 19-1 Properties of Aerosols: Chapter 9 Basic Principles Governing Exposure (Exposure routes): Chapter 6 Basic Processes and their Hazards: Chapter 5 Sampling Strategy: Chapter 14, 306-311
June 8 8:00 a.m. – 12:00 p.m.	Evaluating the Hazards Case Examples and Demonstrations <u>Required Readings</u> **From Perkins:** Reasons for Sampling Exposures: Chapter 14, 304-306 Solid Media: Chapter 19, 431-448; Chapter 21, 480-500; Chapter 27, 692-699 Liquid Media: Chapter 20, 474-478 Grab Samples: Chapter 20, 468-474 Direct Reading Instruments: Chapter 25, 614-622, 639-648 Exposure Limits and Guidelines: Chapter 10, 199-226
June 9 8:00 a.m. – 12:00 p.m.	Controlling the Hazards <u>Required Readings</u> **From AIHA (*on reserve*)** General Methods for the Control of Airborne Hazards: Chapter 31, 828-847
June 10 8:00 a.m. – 12:00 p.m.	The practice of Recognition, Evaluation and Control Video Field Trip
June 11 8:00 a.m. – 12:00 p.m.	Group Project

IX. Class Project