INDUSTRIAL HYGIENE CHEMICAL HAZARD EVALUATION

Instructor: **Carl Farley, carl.farley@usu.edu, 435-797-2566**
Office Hours: **Tuesday and Thursday, 9:00 - 11:00**
Lectures: **LSB 214, 7:30 - 8:45, Tuesday and Thursday**
Labs: **LSB 214, 2:00 - 4:50 Tuesday or Thursday**

Introduction:

This course teaches a key aspect of industrial hygiene practice: the evaluation of chemical exposures. Typically this involves exposure monitoring (i.e., sampling) and subsequent evaluation of the data to assess the actual exposure. Results are compared to applicable occupational exposure limits, such as the ACGIH TLVs. Information must be communicated through written & oral reports.

Objectives:

After this class, students will know how to conduct chemical exposure monitoring, and they will gain applicable technical skills and workplace experience. Students will complete a monitoring project at a local worksite, including:

- selection of the proper sampling method
- preparation and calibration of all equipment
- sample collection
- submitting samples to a laboratory for analysis
- preparation and calibration of all equipment
- making an oral presentation to the class

Textbooks:

The course text is *The Occupational Environment - Its Evaluation and Control* , also used for PUBH 4310 and PubH 4330. We will use the new **Third** Edition since it is available now. We will also use the ACGIH TLV book. Older copies are available in the lab, but students get a new book if they join the ACGIH.

Grading:

First exam	100 points
Second exam	100 points
Final exam	100 points
Sampling Project	125 points
Lab & assignments	75 points
Homework/Quizzes	75 points
Total	575 points

Labs:

Students must register for a laboratory session. Labs will be in BNR 14.

Fees:

$100 Lab fees assessed for the class are used to purchase supplies and to maintain equipment used in the lab.

Project:

The sampling project is a major component of the course. Students are expected to perform at a professional level, and to produce a professional-quality report. The project will require students to spend substantial effort outside of class as their group cooperates with preparation, sampling, and reporting.

Given constraints of the academic schedule, it is especially important to keep "on track"

- Sampling projects should be completed by mid-march (lab results take about 2 weeks to receive)
- Groups must meet with the instructor by the end of March and submit their report outline
- The complete report (not a rough draft) is due April 10, submitted in printed and electronic format
- The revised final version is due April 19, submitted in printed and electronic format

Date and Day		Topic	References	Assignments/Labs
1/8/2019	Tue	Intro, project discussion, PPE	[1]Text 39,40	***No labs this week***
1/10/2019	Thu	PPE, Occupational Exposure Limits	[1]Text 4, TLVs	
1/15/2019	Tue	PPE, Occupational Exposure Limits		#A PPE
1/17/2019	Thu	Evaluating worker exposure	[1]Text 7	
1/22/2019	Tue	Sampling and Analytical Methods	[1]Text 13, [2]NMAM, etc.	#1 OELs
1/24/2019	Thu	Sampling and Analytical Methods		
1/29/2019	Tue	Airflow Calibration & Air Density	[1]Text 15	#2 Calibration/Rotameters
1/31/2019	Thu	Airflow Calibration & Air Density		
2/5/2019	Tue	Gas and Vapor Sampling	[1]Text 11,12	#3 Methods
2/7/2019	Thu	Gas and Vapor Sampling		
2/12/2019	Tue	Catch-up or Review		#4 Gases & vapors
2/14/2019	Thu	**First midterm exam**		
2/19/2019	Tue	Aerosol Sampling	[1]Text 14	#5 Aerosols

2/21/2019	Thu	Aerosol Sampling		
2/26/2019	Tue	Direct-reading tubes/instruments	[1]Text 17	#6 Direct Reading
2/28/2019	Thu	Direct-reading tubes/instruments		
3/5/2019	Tue	Written reports and presentations	[1]Text 51	#7 Shipping & handling
3/7/2019	Thu	Sample shipping & handling	[3]OTM	**Sampling should occur about now**
3/12/2019	***Tue***	***Spring Break***		
3/14/2019	***Thu***	***Spring Break***		
3/19/2019	Tue	Indoor Air Quality, Bioaerosols	[1]Text 18, 19	#8 IAQ
3/21/2019	Thu	Indoor Air Quality, Bioaerosols		**Sampling should occur about now**
3/26/2019	Tue	**Second Exam**		#9 Asbestos
3/28/2019	Thu	Asbestos sampling	Handout	
4/2/2019	Tue	Wipe and bulk sampling	[4]OTM	#9 IAQ
4/4/2019	Thu	Statistical considerations	[5]OTM, [6]NIOSH	**Report Results Table Due**
4/9/2019	Tue	Sampling strategy	[1]Text 9, [6]NIOSH	#10 Statistics
4/11/2019	Thu	IH Audits	[1]Text 42	**1st Draft Report Due**
4/16/2019	Tue	Student presentations		#11 Sampling practical exam
4/18/2019	Thu	Student presentations		**Final Draft Report due**
4/23/2019	Tue	Student presentations		
4/30/2019	Tue	**Final Examination**		

[1]Third edition of The Occupational Environment - Its Evaluation and Control

[2]NIOSH Manual of Analytical Methods

[3]OSHA Technical Manual, Section II Chapter 1

[4]OSHA Technical Manual, Section II, Chapter 2

[5]OSHA Technical Manual, Section II Chapter 1, APPENDIX II:1-6

[6]Occupational Exposure Sampling Strategy Manual DHHS (NIOSH) Publication No. 77-173

Students with physical, sensory, emotional or medical impairments may be eligible for reasonable