

IH&S 725 Industrial Hygiene Sampling and Analysis Spring 2015

Lecture Coordinator:

Dr. Christopher Coffey Ph.D.
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Office Hours: By arrangement

Course prerequisites:

IENG 561 and consent of instructor

Reference materials for the class:

The Occupational Environment – Its Evaluation and Control, Edited by Salvatore DiNardi, Published by the Am. Ind. Hyg. Association

Air Sampling Instruments for Evaluation of Atmospheric Contaminants, 8th edition. Edited by the Air Sampling Instruments Committee of the Am. Conf. of Governmental Ind. Hyg.

A Strategy for Assessing and Managing Occupational Exposures, 2nd Edition Edited by John R. Mulhausen and Joseph Damiano

Philosophy of the Course:

The philosophy of the course is to teach and expose students to the basic aspects of developing and conducting exposure assessments and to impress upon them their responsibility as health and safety professionals to be able to assemble information and data from the scientific literature and to evaluate that information and data to make professionally and scientifically sound decisions about the potential of or actual exposure to a worker or group of workers.

Objectives of the Course:

- 1) Introduce students to the elements of developing, planning and conducting an exposure assessment and developing a sound, reasoned sampling strategy.
- 2) Introduce students to the basic techniques they need to professionally and scientifically evaluate and analyze exposure information and data, including statistically based decision making.
- 3) Provide students a real-world experience of working with labor, management, and analytical laboratories to conduct an exposure assessment.
- 4) Give students the opportunity to setup and use spreadsheet capabilities to manage, sort, and evaluate large volumes of exposure data.
- 5) Guide students through the process of critically evaluating exposure assessment related material published in the professional and scientific literature.

Student Learning Outcomes for the Course:

Students completing IH&S 725 will have acquired ability to:

- 1) Develop and implement an exposure assessment strategy, in a real-world exposure situation, suitable to make a sound, reasoned decision about the exposure that was assessed (Program Outcome 1, 5, 6 & 8);
- 2) Identify and evaluate variables that effect the selection of appropriate sampling instrumentation and analytical methodology to assess exposure (Program Outcome 1);
- 3) Determine minimum sampling volumes, reduce impactor data and do lognormal probability calculations and plots (Program Outcome 1 & 2);
- 4) Calculate statistical parameters of an exposure estimate to make statistically based decisions (Program Outcome 1 & 2);
- 5) Critically review the scientific and professional literature on exposure assessment (Program Outcome 1 & 3);
- 6) Use spreadsheets to store, evaluate and analyze exposure data (Program Outcome 1 & 4); and

7) Prepare a presentation of their exposure assessment using presentation software (Program outcome 1 & 8).

Method of Instruction:

IH&S 725 includes both a lecture and laboratory/field experience. The laboratory incorporates a field experience conducted under the mentorship of the plant occupational safety and health professional and the course coordinator, both of which will generally hold the C.I.H., C.S.P, or other professional certification. The lecture experience incorporate three hours of lecture each week of the semester. The laboratory experience incorporates three hours of laboratory each week of the semester which is used for the field experience.

Notes:

Depending on the availability of laboratories guest lecturers, lecture schedules may need to be revised. You are expected to have access to a computer with spreadsheet software and will need a basic knowledge of spreadsheets and formula writing in a spreadsheet.

You are expected to have access to a computer with presentation software and be able to prepare a presentation using such software.

If you do not have spreadsheet or presentation software skills you will be expected to acquire them to a level sufficient to complete the class assignments.

Tentative lecture schedule

Date	Lecture Description
1/13/2015	L1 – Introduction: Review of IH calculations and Gas Laws; Exposure Assessment Strategy, Dr. Christopher Coffey
1/20/2015	L2 – Analytical Methods, Dr. Christopher Coffey
1/27/2015	L3 – Gas and Vapor Sampling, TBD
2/3/2015	L4 – Aerosol Sampling, TBD, Quiz #1
2/10/2015	L5 – Specialty Sampling, TBD
2/17/2015	L6 – Sample Quality Assurance, Dr. Christopher Coffey
2/24/2015	Exam #1
3/3/2015	L7 – Compliance decisions, Dr. Christopher Coffey
3/10/2015	L8 – Intro to Sampling Statistics, TBD
3/17/2015	L9 – Control Banding, TBD
3/24/2015	L10 – Descriptive Statistics, TBD Quiz #2
3/31/2015	Spring Break – No Class
4/7/2015	Exam #2 Article review
4/14/2015	L10a – Descriptive Statistics continued, TBD
4/21/2015	L11 – Impactor data analysis TBD
4/28/2015	Sampling Reports Due and Final Exam

GRADING

Hour exams (15% ea.)-----	30%
Homework & quizzes-----	30%
Final -----	15%
Article Review-----	5%
Sampling Project	
Final Report-----	15%
Presentation-----	5%

Policy on Academic Dishonesty

Anyone found cheating on an exam, assignment, labs or copying electronic data or programs etc. will be given a 0 on that activity and a formal report will be made to the department Chairperson. Working together on assignments is encouraged; however each student must turn in their own work.

Social Justice Statement

West Virginia University is committed to social justice. I concur with that commitment and expect to foster a nurturing learning environment based upon open communication, mutual respect, and non-discrimination. Our University does not discriminate on the basis of race, sex, age, disability, veteran status, religion, sexual orientation, color or national origin. Any suggestions as to how to further such a positive and open environment in this class will be appreciated and given serious consideration.

If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with Disability Services (293-6700).