

**EHS 212**  
**INDUSTRIAL HYGIENE SAMPLING**

**COURSE DESCRIPTION:**

Prerequisites: None

Corequisites: None

This course covers industrial hygiene and sampling. Topics include the calibration and operation of sampling equipment and instruments. Upon completion, students should be able to perform basic industrial hygiene sampling procedures and interpret the results. In addition, the course covers applications and use of personal protective equipment. Course Hours Per Week: Class, 3. Lab, 2. Semester Hours Credit, 4.

**COURSE OBJECTIVES:**

Upon completion of this course, the student will be able to:

- a. Identify health hazards associated with common industrial processes.
- b. Develop air sampling strategies for hazard assessment and regulatory compliance.
- c. Design a sampling train for the evaluation of particulate or gaseous contaminants.
- d. Use direct-reading instruments to evaluate atmospheric hazards in confined spaces.
- e. Perform qualitative fit testing of air-purifying respirators.
- f. Conduct surveys for the evaluation of occupational noise hazards.

**OUTLINE OF INSTRUCTION:**

- I. Industrial hygiene measurements
  - A. Measurements: mass, length, area, volume
  - B. Metric system
  - C. Dimensional analysis
  - D. Typical industrial hygiene units
- II. Hazard Identification
  - A. Types of airborne hazards
  - B. Other hazards: noise, heat, radiation
  - C. Process safety
- III. Air sampling strategies
  - A. Instantaneous vs. integrated sampling
  - B. Personal vs. area sampling
  - C. Sampling periods and numbers

- IV. Air sampling devices
  - A. The sampling train
  - B. Collection media
  - C. Direct reading instruments
  - D. Pumps
  
- V. Pump calibration
  - A. Primary calibration
  - B. Secondary calibration
  - C. Correction for temperature and pressure
  
- VI. Sampling procedures
  - A. Communication with employees
  - B. Data sheets
  - C. Recording data
  - D. Sample handling and storage
  
- VII. Sample Analysis
  - A. Laboratory analysis
  - B. Calculating TWA exposures
  - C. Determining compliance
  - D. Analytical error
  
- VIII. Sampling for particulates
  - A. Pre-collectors
  - B. Analysis of silica
  - C. Analysis of asbestos
  - D. Other particulates
  
- IX. Sampling with direct-reading instruments
  - A. Oxygen meters
  - B. Combustible gas meters
  - C. Other gas meters
  - D. Indicator tubes
  - E. Use in confined space entry, hazardous materials incidents
  
- X. Respiratory protective equipment
  - A. Air purifying respirators
  - B. Air supplying respirators
  - C. Respirator selection
  - D. Fit testing
  
- XI. Evaluation of occupational noise exposures
  - A. Measuring sound
  - B. Sound-measuring instruments
  - C. Noise control programs and regulations

## **REQUIRED TEXTBOOKS AND MATERIALS:**

American Conference of Governmental Industrial Hygienists, 2006 *TLVs and BEIs*. Cincinnati, Ohio: ACGIH, 2006 (or recent edition).

SKC, Inc. *Introduction To Air Sampling Methods* (compact disk). Eighty Four, Pennsylvania: SKC, Inc., current version.

## **STATEMENT FOR STUDENTS WITH DISABILITIES:**

Students who require academic accommodations due to any physical, psychological, or learning disability are encouraged to request assistance from a disability services counselor within the first two weeks of class. Likewise, students who potentially require emergency medical attention due to any chronic health condition are encouraged to disclose this information to a disability services counselor within the first two weeks of class. Counselors can be contacted by calling 686-3652 or by visiting the Student Development Office in the Phail Wynn Jr. Student Services Center, room 1309.