

INDUSTRIAL HYGIENE I, ENVR 531 / 331

Background: Industrial Hygiene I is one of the principal required courses for the environmental health major. It sets the base for subsequent courses such as industrial ventilation, noise, radiation safety, etc.

Purpose: Provide practical theory as applies to the classic industrial hygiene and environmental health fields. Students will become acquainted with the array investigative, scientific, engineering, organizational, and social skills, which must be, employed to effectively control hazards. The course is an introduction to common chemical, physical, and biological agents, ergonomic stresses and the risk they pose to human health and safety.

Course Description: This course will introduce students to basic industrial hygiene concepts, as well as pertinent OSHA regulations, and recommendations as defined by such noted authorities as ACGIH, NIOSH, NRC, and ASHRAE. Students will apply their knowledge of science and engineering to systematically anticipate, identify, evaluate and control occupational and environmental hazards. They will learn terms and basic calculations necessary to identify and quantify human exposures. Major categories of occupational diseases and their associated symptoms will be discussed and defined. Students will be required to identify common occupational stressors and the major exposure routes that comprise significant risks to occupational health and safety. Exposure scenarios will be provided from industrial and agricultural areas, as well as from the environmental and public health settings. Classes consist of a combination of lectures, videos interactive discussions. To develop the individual and group skills classes will be divided into teams of students. Each team is assigned a real or realistic project. Each student is expected to participate in a project and report his or her work via written and verbal presentations.

Relation to Other Curricula: This course will serve as a first course in occupational hygiene, as well as familiarize the student with the rigors associated with compliance with the numerous occupational health and safety regulations. The course is designed to provide the student with a sound theoretical basis from which Industrial Hygiene II (Programs) and Industrial Hygiene Lab will continue to build.

At the completion of the course the student should:

- Understand the role of the industrial hygienist as investigator, both in the traditional industrial setting and in less traditional public and environmental health fields;
- Understand the role of OSHA and NIOSH and other agencies and organizations in influencing workplace procedures.
- Satisfactorily assess basic exposure situations, including calculating time weighted averages and comparing them to OSHA defined permissible exposure limits, ACGIH threshold limit values and NIOSH recommended exposure levels;
- Develop important skills necessary for conducting field investigations and independent research, including critical thinking and basic hazard recognition skills;
- Understand and satisfactorily prepare concise, accurate, and informative field notations, to serve as the basis for a final report;
- Exercise improved written and verbal communication skills, including those needed for audio-visual aided presentation.

Instructor:

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Class Period:

Three hours one evening per week. This course is typically scheduled for the Fall.

Required Text:

Fundamentals of Industrial Hygiene, Fourth Edition, Barbara A. Plog, Jill Niland, Patricia J. Quinlan, National Safety Council

Other Resources:

www.osha.gov, www.niosh.gov

Lecture Syllabus:

**ENV 531 INDUSTRIAL HYGIENE I
Fall Offering**

<u>Date</u>	<u>Topic</u>	<u>Reference</u>
1	Introduction to Industrial Hygiene	Chapter 1
2	Review of Anatomy & Physiology Chemical and Physical Principles	Chapters 2, 3, 4, & 5
3	Toxicology & Chemical Exposure	Chapters 6, 7, & 8
4	Physical, Ergonomic, & Biologic Hazards	Chapters 9 thru 14
5	Planning & Conducting Inspections and Sampling	
6	Sampling Methodologies, & Exposure Limits	Chapters 15, 16 & 17
7	Interpretation, Comparison to References Corrective Actions	Chapter 18
8	Ventilation & Other Engineering Controls, Hazard Communication	Chapters 19, 20 & 21
9	Personal Protective Equipment	Chapter 22
10	Indoor Environments	
11	Project Presentation	

Grading

Homework: One to two page weekly writing assignments ----- 25%

Exams: Quizzes and midterm ----- 25%

Individual presentation: ----- 20%

Group project: ----- 20%

Attendance: ----- 10%