

Course Syllabus: IE 615 Industrial Hygiene and Occupational Health

Semester: Spring 2025

Instructor: Prakash Kothari, CIH, CSP, pak24@njit.edu

Textbook: Fundamentals of industrial hygiene, 6th Ed., Barbara A. Plog (Ed.), National Safety Council, 2012.

Reference book: Recognition of health hazards in industry, 2nd Ed., William A. Burgess, NY: John Wiley & Sons, 1995

Class Schedule: Monday - 6:00-8:50 p.m., Room CKB 114

Course description: An introduction to industrial hygiene is presented. Recognition, evaluation and control of human exposure to noise, heat, bio-hazards, chemicals, radiation and improper lighting are discussed. Government standards, field measurements, work practices, engineering designs and the effects of excessive exposure on worker health and productivity are addressed.

Learning Objectives: At the end of this course, the student will be able to:

- Describe the legal, professional, and ethical framework for the practice of industrial hygiene.
- Define basic terms and technical concepts integral to the practice of industrial hygiene.
- Explain the differences between chemical (gases/vapors, dusts/mists/fumes), physical, and biological agents in the workplace.
- Calculate time-weighted averages.
- Convert between various units of exposure (for example, mg/m³ to ppm).
- Calculate and interpret noise exposures and doses.
- Identify the basic concepts of workplace exposure assessment.
- Describe the hierarchy of controls and how it applies to hazard control.
- Integrate various concepts into a broader occupational/ environmental health practice.

Course Schedule:

DATE	TOPIC	READINGS
1/24	Industrial Hygiene Overview Occupational Health and Safety	Chps. 1 For more see Appendix A and Part VI
1/31	Industrial Toxicology	Chap 6
2/07	The Respiratory System; Particulates; Diseases of the Lungs	Chap 2, 7 & 8
2/14	The Ear, Industrial Noise	Chap 4 & 9
2/21	The Skin, Occupational Dermatoses; Temperature Extremes	Chap 3 & 12

2/28	Non-Ionizing Radiation; The Eye; Ionizing Radiation	Chap 5, 10 & 11
3/07	Reading Day	
3/14	MIDTERM EXAM	
3/21	SPRING RECESS	
3/28	Ergonomics	Chap 13
4/04	Evaluation of Industrial Hazards: The Survey	Chap 15
4/11	Air Sampling and Analysis	Chap 16 & 17
4/18	Control of Industrial Hazards Methods of Control	Chap 18
4/25	Ventilation	Chap 19, 20 & 21
5/02	Biological Hazards Respiratory Protection	Chap 14 & 22
5/09	Reading Day	
5/16	FINAL EXAM	

Grading: Midterm 25%; Final exam 25%; Quizzes 35%; Outlines (attendance & participation) 15%