

Syllabus

Principles of Industrial Hygiene 11:375:434

Course Description

Principles of Industrial Hygiene provides an introduction to the field of Occupational Health and emergency response operations. The instructor focuses on introducing concepts, terminology, and methodology in the practice of industrial hygiene. The class would benefit those wishing to pursue a Master's degree in Industrial Hygiene or Public health; those interested in the Industrial Hygiene, environmental health or safety professional and/or emergency response career fields. In addition, this course may be applicable to students in such allied science or engineering disciplines such as but not limited to Environmental Sciences, Environmental Engineering and Industrial Engineering needing a basic understanding of Industrial Hygiene or whose employment career may require a 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER). As part of successfully passing the Principles of Industrial Hygiene course, a 40-hour HAZWOPER certificate will be issued. This is per adherence to the US Department of Labor, Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.120.

Text

Current edition of TLVs and BEIs, American Conference of Industrial Hygienists, Signature Publications. Recommended but not required resource: Fundamentals of Industrial Hygiene (5th edition), National Safety Council Chicago, IL, 5th edition or most current available.

Grading system

Quiz, mid-term exam, final exam and participation in various homework assignments, student topic discussion, hands-on exercises and drills.

Major Course Objectives

Upon completion of this course, you should be able to but not limited to:

- Describe the legal, professional, and ethical framework for the practice of industrial hygiene.
- How to recognize, evaluate, anticipate and control chemical, biological, physical and biomechanical hazards and stressors.
- 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.

- Understand occupational exposure limits in its risk evaluation of hazardous substances.
- Identify the basic concepts of workplace exposure assessments.
- Describe the hierarchy of controls and how it applies to hazard control.
- How to recognize, evaluate, safely control and respond to hazardous substance releases.
- Provide a basis for advanced course work in occupational safety and health and emergency response.
- Earn a 40-hour HAZWOPER certificate.

Course agenda

Topic descriptions
Overview of Course, Introduction & Overview of Industrial Hygiene/Safety, industrial process risk assessments, brief review of Human Anatomy and Physiology
Toxicology (inhalation, skin, eye hazards and associated health hazards)
Chemical Hazards-Recognition of hazards for gases, vapors, solvents & particulate, gas and vapor air monitoring (hands-on workshop)
Particulate, Gas and Vapor Monitoring (hands-on workshop), Threshold Limit Values (TLVs), Biological Exposure Indices (BEIs),
ERG, MSDS, NIOSH, TLV-Book (all TLVs, TWA, STELs, C,) Ergonomics (biomechanical), Non ionizing and radiation hazards and controls
OSHA Government Regulations (including 1910.120) TLV-Documentation continued and OSHA PEL's, STEL, Ceiling limits, units of measurements and special chemical hazard regulations (i.e. Asbestos, methylene chloride, Hexavalent Chromium)
Temperature Extremes, Noise, Fall Protection, Fire Protection, Confined space, Biosafety/Indoor Air Quality & Mold Assessment
Personal Protective Equipment Controls (Respirators, Safety Glasses, Protective suits, etc.) hands-on exercises, Sanitation (Occupational Hygiene)
Ventilation/engineering controls, Lockout/tagout OSHA regulation
Medical Surveillance, spill containment, absorption and disposal methods, Container drum handling & decontamination hands-on practice & technique drills
Health and Safety Plan (HASP) desk top review, Illumination
HAZMAT team zones, role assignments, incident command and pre- emergency response drill hands-on activities
Emergency response hands-on spill release drill