

ENV HLT 259B: Workplace Safety (2 units)
Fall Quarter 2017 PUB HLT 51-279

Instructor: Hamid Arabzadeh
949-697-5457
hamidcih@aol.com

Lecture: 2 hours/week Mondays 1-2:50p

Prerequisites: One year of undergraduate mathematics (calculus); one year of undergraduate physics; one year of undergraduate chemistry; one year of undergraduate biology; one quarter of undergraduate organic chemistry

General Course Description:

The general objective of this 2 unit course is to introduce students to a broad range of topics in traditional workplace safety, that is, mechanical hazards, their recognition, evaluation, control, and prevention. It complements its companion course EHS259A, that is concerned with human effects to occupational mechanical and psychosocial stresses, emphasizing ergonomics and psychosocial effects. The objectives will be accomplished through lectures on safety hazards, their classification, metrics, control philosophy, and control methods. Specific topic areas will include traditional safety basics, such as fall hazards, machine safety, lock-out/tag-out, confined spaces, and fire hazards. The student will also be introduced to concepts of safety culture and philosophy. Students will also be expected to review and present a peer-reviewed article on a topic relevant to the course material.

Course Objectives and Associated Competencies:

At the end of the course, students should be able to:

1. Discuss the scope and history of traditional workplace safety practice.

Associated Competencies:

MPH: C3 – Describe federal and state regulatory programs, guidelines and authorities that control environmental health issues.

MS A1-Retrieve and organize literature; synthesize and critically evaluate scientific literature in environmental health, public health and other relevant fields

B5 Be able to articulate interdisciplinary approaches to solving public health problems.

C1 Use computer systems and analytic software packages.

F4 Identify and implement appropriate safety controls and practices

IHP: i – Understand fundamental aspects of safety and environmental health.

2. Use metrics of workplace injury occurrence and injury severity.

Associated Competencies:

MPH: C3 – Describe federal and state regulatory programs, guidelines and authorities that control environmental health issues.

C4 – Specify current environmental risk assessment methods.

C5 – Specify approaches for assessing, preventing and controlling environmental hazards that pose risks to human health and safety.

MS F4 Identify and implement appropriate safety controls and practices

- IHP: b – Describe qualitative and quantitative aspects of occupational health agents, factors, and stressors.
d – Assess qualitative and quantitative aspects of exposure assessment, dose-response, and risk characterization.
3. Discuss principles of workplace vehicle safety and fleet safety.
Associated competencies:
MPH: C3 – Describe federal and state regulatory programs, guidelines and authorities that control environmental health issues.
C5 – Specify approaches for assessing, preventing and controlling environmental hazards that pose risks to human health and safety.
MS F4 Identify and implement appropriate safety controls and practices
IHP a – Identify agents, factors, and stressors generated by and/or associated with defined sources, unit operations, and processes.
b – Describe qualitative and quantitative aspects of occupational health agents, factors, and stressors.
d – Assess qualitative and quantitative aspects of exposure assessment, dose-response, and risk characterization.
f – Recommend and evaluate engineering, administrative, and personal protective controls.
g – Understand applicable business and managerial practices, and industrial hygiene program management.
h – Interpret and apply applicable occupational and environmental regulations.
i – Understand fundamental aspects of safety and environmental health.
4. Recognize and prevent fall hazards.
Associated competencies:
MPH: C3 – Describe federal and state regulatory programs, guidelines and authorities that control environmental health issues.
C5 – Specify approaches for assessing, preventing and controlling environmental hazards that pose risks to human health and safety.
MS F4 Identify and implement appropriate safety controls and practices
IHP: a – Identify agents, factors, and stressors generated by and/or associated with defined sources, unit operations, and processes.
b – Describe qualitative and quantitative aspects of occupational health agents, factors, and stressors.
d – Assess qualitative and quantitative aspects of exposure assessment, dose-response, and risk characterization.
f – Recommend and evaluate engineering, administrative, and personal protective controls.
g – Understand applicable business and managerial practices, and industrial hygiene program management.
h – Interpret and apply applicable occupational and environmental regulations.
i – Understand fundamental aspects of safety and environmental health.
5. Recognize and prevent fire and electric safety hazards.
Associated competencies:
MPH: C3 – Describe federal and state regulatory programs, guidelines and authorities that control environmental health issues.
C5 – Specify approaches for assessing, preventing and controlling environmental hazards that pose risks to human health and safety.
MS F4 Identify and implement appropriate safety controls and practices
IHP: a – Identify agents, factors, and stressors generated by and/or associated with defined sources, unit operations, and processes.

- b – Describe qualitative and quantitative aspects of occupational health agents, factors, and stressors.
 - d – Assess qualitative and quantitative aspects of exposure assessment, dose-response, and risk characterization.
 - f – Recommend and evaluate engineering, administrative, and personal protective controls.
 - g – Understand applicable business and managerial practices, and industrial hygiene program management.
 - h – Interpret and apply applicable occupational and environmental regulations.
 - i – Understand fundamental aspects of safety and environmental health.
6. Recognize and control the hazards of stored energy.
- Associated competencies:
- MPH: C3 – Describe federal and state regulatory programs, guidelines and authorities that control environmental health issues.
C5 – Specify approaches for assessing, preventing and controlling environmental hazards that pose risks to human health and safety.
- MS A1-Retrieve and organize literature; synthesize and critically evaluate scientific literature in environmental health, public health and other relevant fields
B5 Be able to articulate interdisciplinary approaches to solving public health problems.
C1 Use computer systems and analytic software packages.
F4 Identify and implement appropriate safety controls and practices
- IHP: a – Identify agents, factors, and stressors generated by and/or associated with defined sources, unit operations, and processes.
b – Describe qualitative and quantitative aspects of occupational health agents, factors, and stressors.
d – Assess qualitative and quantitative aspects of exposure assessment, dose-response, and risk characterization.
f – Recommend and evaluate engineering, administrative, and personal protective controls.
g – Understand applicable business and managerial practices, and industrial hygiene program management.
h – Interpret and apply applicable occupational and environmental regulations.
i – Understand fundamental aspects of safety and environmental health.
7. Recognize and prevent machine guarding hazards.
- Associated competencies:
- MPH: C3 – Describe federal and state regulatory programs, guidelines and authorities that control environmental health issues.
C5 – Specify approaches for assessing, preventing and controlling environmental hazards that pose risks to human health and safety.
- MS F4 Identify and implement appropriate safety controls and practices
- IHP: a – Identify agents, factors, and stressors generated by and/or associated with defined sources, unit operations, and processes.
b – Describe qualitative and quantitative aspects of occupational health agents, factors, and stressors.
d – Assess qualitative and quantitative aspects of exposure assessment, dose-response, and risk characterization.
f – Recommend and evaluate engineering, administrative, and personal protective controls.
g – Understand applicable business and managerial practices, and industrial hygiene program management.

- h – Interpret and apply applicable occupational and environmental regulations.
 - i – Understand fundamental aspects of safety and environmental health.
8. Discuss workplace safety culture, safety philosophies, and programmatic approaches to safety.
- Associated competencies:
- MPH: C5 – Specify approaches for assessing, preventing and controlling environmental hazards that pose risks to human health and safety.
- MS F4 Identify and implement appropriate safety controls and practices
- IHP: f – Recommend and evaluate engineering, administrative, and personal protective controls.
- g – Understand applicable business and managerial practices, and industrial hygiene program management.
- i – Understand fundamental aspects of safety and environmental health.
9. Discuss the psychosocial aspects of workplace safety.
- Associated competencies:
- MPH: C2 – Describe genetic, physiologic and psychosocial factors that affect susceptibility to adverse health outcomes following exposure to environmental hazards.
- C5 – Specify approaches for assessing, preventing and controlling environmental hazards that pose risks to human health and safety.
- MS F4 Identify and implement appropriate safety controls and practices
- IHP: b – Describe qualitative and quantitative aspects of occupational health agents, factors, and stressors.
- d – Assess qualitative and quantitative aspects of exposure assessment, dose-response, and risk characterization.
- f – Recommend and evaluate engineering, administrative, and personal protective controls.
- g – Understand applicable business and managerial practices, and industrial hygiene program management.
- i – Understand fundamental aspects of safety and environmental health.
10. Develop and implement workplace safety programs.
- Associated competencies:
- MPH: C3 – Describe federal and state regulatory programs, guidelines and authorities that control environmental health issues.
- C5 – Specify approaches for assessing, preventing and controlling environmental hazards that pose risks to human health and safety.
- MS F4 Identify and implement appropriate safety controls and practices
- IHP: f – Recommend and evaluate engineering, administrative, and personal protective controls.
- g – Understand applicable business and managerial practices, and industrial hygiene program management.
- h – Interpret and apply applicable occupational and environmental regulations.
- i – Understand fundamental aspects of safety and environmental health.
11. Communicate with peers, in an oral presentation, the specifics of a workplace safety hazard and its control.
- Associated competencies:
- MPH: C7 – Discuss various risk management and risk communication approaches, including their relation to issues of environmental justice and equality .
- MS A1-Retrieve and organize literature; synthesize and critically evaluate scientific literature in environmental health, public health and other relevant fields
- B5 Be able to articulate interdisciplinary approaches to solving public

health problems.

C1 Use computer systems and analytic software packages.

IHP: n – Recognize the need for life-long learning.

q – Communicate effectively with other professionals, workers, and the public.

Textbook:

Haight, Joel M. (ed.): The Safety Professionals Handbook, Volumes I (Management Applications) and II (Technical Applications), 2nd edition, ASSE, 2012.

Grading:

Student understanding and mastery of the presented material will be assessed by performance on homework and exams.

Homework: 20%

Midterm exam: 40%

Final exam: 40%

Week	Week	Lecture Topic
1	10/2 1-3pm	Occupational Safety History and Scope
2	10/9 1-3pm	Vehicle Accidents/Fleet Safety
3	10/16 1-3pm	Injuries from Mechanical Hazards
4	10/23 1-3pm	Slips, Trips, Falls/Falls from Heights
5	10/30 1-3pm	Midterm
6	11/6 1-3pm	Fire Safety
7	11/13 1-3pm	Electric Safety, Lock Out/Tag Out
8	11/20 1-3pm	Machine Safety and Guarding
9	11/27 1-3pm	Behavior-based Safety/Psychosocial Aspects
10	12/4 1-3pm	Journal Article Presentation-Case Studies
11	Final 12/11 1-3pm	Final Examination

Homework would involve being able to examine the scientific safety, newspaper, and legal literatures to obtain information relevant to the assigned safety topic and to formulate preventive strategies to be articulated in a written report handed in and presented verbally at the Final Oral Exam in Examination week