



MEL AND ENID ZUCKERMAN  
COLLEGE OF  
PUBLIC HEALTH

**Mel and Enid Zuckerman College of Public Health  
University of Arizona**

**SYLLABUS  
Introduction to Safety and Ergonomics  
CPH 422 / 522  
FALL 2017**

<b>Time:</b>	Wednesdays 1:00 pm - 3:50 pm
<b>Location:</b>	Drachman A120
<b>Instructor(s):</b>	Boris Reiss, PhD, CIH
<b>Contact Information:</b>	The University of Arizona Mel & Enid Zuckerman College of Public Health Roy P. Drachman Hall 1295 North Martin Ave., Rm A243 P.O. Box 245210 Tucson, AZ 85724-5163 Tel.: 520-626-0795 Fax.: 520-626-3101
	Guest instructor: Bruno Loya Health and Safety Specialist Risk Management Services
<b>Instructor Availability:</b>	Office hours: Wednesdays 4:00-5:00 pm or by appointment Email: D2L; I will check at the end of each work day Response: Sometime during regular MEZCOPH office hours (8-5 pm); Please allow 1 business day for a response Phone: Not a preferred
<b>Teaching Assistant:</b>	No teaching assistant
<b>TA Office Hours</b>	NA
<b>Catalog Description:</b>	Fundamentals of occupational safety, emphasizing regulatory requirements and best-practices targeted to eliminate major sources of occupational injuries. Hazard identification, behavioral safety, and incident investigation will be discussed.

Graduate-level requirements include a written paper evaluating a topical incident pertinent to the state/region, including an analysis of contributing factors and recommendations to prevent future occurrences.

**Course Description:**

This class will cover the basics of a company safety and health program and the minimum requirements under Federal OSHA and State OSHA. Students will prepare for the 10 hour OSHA General Industry Safety and Health Training Card from OSHA. All students will present their findings for specific industry hazards and graduate students will develop an additional industry safety and health written accident prevention program.

**Course Prerequisites:**

EHS/CPH 584 or consent of instructor.  
Willingness to work and think critical.

**Course Learning Objectives:**

Students will be able to:

1. Identify:
  - a. components needed to provide a safe and healthful work environment through case studies and review of injury statistics provided in the course.
  - b. potential workplace safety and health hazards and determine how to mitigate the hazards through engineering controls, administrative controls and personal protective equipment.
  - c. demonstrate a working knowledge of the occupational health and safety regulations contained in the Federal Register under the 29 CFR 1910 standards.
  - d. major historical events that influenced accident prevention activities in the pre/post industrial revolution.
  - e. moral and economic consequences associated with the major classifications and causes of accidents and the cost of workers compensation based on the risk classes of industries.
  - f. requirements of training programs in the workplace under the existing OSHA and State-OSHA Requirements.
  - g. basic fire prevention and protection programs in the workplace.
  - h. essential elements of an occupational safety and health program and international standard organizations in safety and health.
2. Review:
  - a. principles for developing and implementing a successful occupational health and safety program and evaluation of a work site.
3. Demonstrate:
  - a. research skills necessary for mastery of the topic, which will entail a presentation on a specific industry. Worker compensation claims in the industry selected by the student will be evaluated and injury prevention methods reviewed in the report.
4. Compare:
  - a. past and contemporary philosophies of safety and accident prevention
  - b. injury data from previous decades.
5. Explain:
  - a. causal relationship between accidents and liability including the no fault workers compensation system and the third party liability type lawsuit.
6. Describe:

- a. basic components of an effective company safety and health program including management commitment, employee involvement, hazard recognition and control and training.
- 7. Analyze:
  - a. safety and health issues resulting from worker complaints or OSHA violations and suggest potential remedies.
- 8. Conduct:
  - a. basic safety inspections using strategies that they have developed though hazard identification and job hazard analysis.
- 9. Author:
  - a. Safety Inspection Report
- 10. Analyze:
  - a. Health and Safety data

Table 1 MPH Program Competencies Covered

<b>A</b>	<b>ANALYTICAL SKILLS:</b>
1.	Defines a problem
2.	Determines appropriate uses and limitations of data
3.	Selects and defines variables relevant to defined public health problems
4.	Evaluates the integrity and comparability of data and identifies gaps in data sources
5.	Understands how the data illuminates ethical, political, scientific, economic, and overall public health issues
6.	Understands basic research designs used in public health
7.	Makes relevant inferences from data

<b>B</b>	<b>COMMUNICATION SKILLS:</b>
1.	Communicates effectively both in writing and orally (unless a handicap precludes one of those forms of communication)
6.	Uses all types of media to communicate important public health information

All MPH program competencies are listed at the College's Website:

<http://www.publichealth.arizona.edu/academics/mph> and <https://publichealth.arizona.edu/public-health-undergraduate-curriculum>

Table 2 ABET Learning Outcomes Met

<b>ABET learning outcome</b>	<b>Meet in course</b>
identify agents, factors, and stressors generated by and/or associated with defined sources, unit operations, and/or processes;	
describe qualitative and quantitative aspects of generation of agents, factors, and stressors	
understand physiological and/or toxicological interactions of physical, chemical, biological, and ergonomic agents, factors, and/or stressors with the human body	
assess qualitative and quantitative aspects of exposure assessment, dose-response, and risk characterization based on applicable pathways and modes of entry	

calculate, interpret, and apply statistical and epidemiological data	X
recommend and evaluate engineering, administrative, and personal protective equipment controls and/or other interventions to reduce or eliminate hazards	X
demonstrate an understanding of applicable business and managerial practices	
interpret and apply applicable occupational and environmental regulations	
understand fundamental aspects of safety and environmental health	X
attain recognized professional certification	

**Course Notes:** Notes will be provide through D2L

**Required Texts or Readings:** There is no required textbook. This class will use OSHA's webpage.

**Required or Special Materials:** A device to access D2L during class (i.e. laptop, tablet etc.)

**Course Requirements:**

**Task to be completed:**

1. Use a semi-profile picture for D2L
  - a. The picture should show your face
  - b. Only your face should be in focus
2. Upload your CV
  - a. prior to starting the course and
  - b. upon completion of class
3. Present a safety topic (1-2 per student depending on enrolment)
  - a. Submit 4 questions for your presentation
4. Complete the in class quizzes on presentations
  - a. multiple choice / True false
  - b. 16 questions in total (4 questions per presentation)
5. Completion of anonymous in-class-survey
  - a. What is the most important thing that you learned?
  - b. What is still unclear?
  - c. What is one question that you still have?
6. Weekly assignments (including video review)
7. Mid-term: multiple choice questions
8. Final: multiple choice questions
9. Conduct: 3 inspections; submit field notes and inspection reports
10. Analysis of safety data i.e. of inspections;
  - a. submit R-code and Final report
11. Be present in all of the OSHA lectures
  - a. You will receive an OSHA 10hr certificate

Table 3 Safety topics

Week	Assessment	Class:	Safety Topic (order can change)
1	<ul style="list-style-type: none"> <li>In class quiz</li> </ul>	Aug. 23	<ul style="list-style-type: none"> <li>Introduction to OSHA, Workers Compensation,</li> <li>The OSHAct, Standards, and Liability,</li> </ul>
2	<ul style="list-style-type: none"> <li>Assignment 1</li> <li>Presentation</li> <li>In class quiz</li> </ul>	Aug. 30	<ul style="list-style-type: none"> <li>OSHA Record Keeping</li> <li>OSHA Inspections, Violations, Citations, Appeals</li> <li>Accidents and Their Effects, Consensus Standards,</li> <li>Theories of Accident Causation</li> </ul>
3	<ul style="list-style-type: none"> <li>Assignment 2</li> <li>Presentation</li> <li>In class quiz</li> </ul>	Sep. 6	<ul style="list-style-type: none"> <li>Late Night retail</li> <li>Motor Vehicle Safety</li> <li>Uniform Building Codes, International Building Codes,</li> <li>Falling Hazards</li> </ul>
4	<ul style="list-style-type: none"> <li>Assignment 3</li> <li>Presentation</li> <li>In class quiz</li> </ul>	Sep. 13	<ul style="list-style-type: none"> <li>Walking and Working Surfaces (1910.22)</li> <li>Machine Guarding (1910.212)</li> <li>Lockout-Tagout 1910.147</li> <li>Electrical Hazards (Subpart S)</li> </ul>
5	<ul style="list-style-type: none"> <li>Assignment 4</li> <li>Presentation</li> <li>In class quiz</li> <li>Midterm, take home, open book</li> </ul>	Sep. 20	<ul style="list-style-type: none"> <li>Fire and Emergency Egress</li> <li>Confined Spaces (1910.146)</li> <li>Welding Safety</li> <li>Ergonomic Hazards and Repetitive Strain</li> </ul>
6	<ul style="list-style-type: none"> <li>Assignment 5</li> <li>Presentation</li> <li>In class quiz</li> </ul>	Sep. 27	<ul style="list-style-type: none"> <li>Noise 1910.95</li> <li>Respiratory Protection (1910.134)</li> <li>Chemical Hazard Communication, MSDS (1910.1200)</li> <li>Asbestos</li> </ul>
7	<ul style="list-style-type: none"> <li>Assignment 6</li> <li>Presentation</li> <li>In class quiz</li> </ul>	Oct. 4	<ul style="list-style-type: none"> <li>Storage of Flammable Materials, Fire Codes</li> <li>Bloodborne Pathogens (1910.130)</li> <li>Industrial Hygiene (PEL's) 1910.1000</li> <li>Process Safety Management 1910.119</li> </ul>
8	<ul style="list-style-type: none"> <li>Assignment 7</li> <li>Presentation</li> <li>In class quiz</li> </ul>	Oct. 11	<ul style="list-style-type: none"> <li>Forklift Safety (1910.178)</li> <li>Personal Protective Equipment (1910.132)</li> <li>PPE Hazard Assessment</li> <li>Hard Hats, Safety Glasses, Harnesses, Safety Boots/ ANSI</li> </ul>
9	<ul style="list-style-type: none"> <li>Assignment 8</li> <li>Presentation</li> <li>In class quiz</li> </ul>	Oct. 18	<ul style="list-style-type: none"> <li>Emergency Eyewash</li> <li>Heat Stress</li> <li>Ladder Safety</li> <li>Scaffold Safety</li> </ul>
10	<ul style="list-style-type: none"> <li>Assignment 9</li> <li>Presentation</li> <li>In class quiz</li> </ul>	Oct. 25	<ul style="list-style-type: none"> <li>Accident and Incident Investigation</li> <li>Root Cause Analysis</li> <li>Accident Prevention</li> <li>Violence Prevention</li> </ul>
11	<ul style="list-style-type: none"> <li>Assignment 10</li> <li>Final exam, take home, open book</li> <li>Grad. students: Acc. Prev. Program</li> </ul>	Nov. 1	
12	<ul style="list-style-type: none"> <li>Inspection Form/Report</li> </ul>	Nov. 8	Inspection 1
13	<ul style="list-style-type: none"> <li>Inspection Form/Report</li> </ul>	Nov. 15	Inspection 2
14	<ul style="list-style-type: none"> <li>Inspection Form/Report</li> </ul>	Nov. 22	Inspection 3
15	<ul style="list-style-type: none"> <li>Data analysis - code</li> </ul>	Nov. 29	Data Analysis 1
16	<ul style="list-style-type: none"> <li>Inspection Report</li> </ul>	Dec. 6	Data Analysis 2

## Graduate students

Each **graduate** student will write a complete Company Health and Safety Accident Prevention Program for a specific type of industry. The list below gives examples of the types of industries and the types of chapters in your manual. A presentation to the class on the hazards of that industry will have to be required.

Possible Industries (although you can select any type of industry you would like):

- Aluminum Smelter
- Auto Repair Shops
- Bakery
- Chemical Manufacturer
- Construction Industry
- Food Processing
- Foundry
- Grain Elevator
- Grocery Store
- Hospital/ Health Care
- Laboratory
- Laundry
- Logging
- Meat Packing
- Metal Fabrication Shop
- Mining
- Pesticide Applicator
- Petroleum Refining
- Plating Shop
- Plumbing Contractor
- Pulp Mill
- Retail Establishment
- Sawmill
- Service Station
- Shipbuilding
- Etc.

**Eight chapters are required to be included into the Company Health and Safety Accident Prevention Program:**

### Required chapters:

Accident Prevention, Chemical Hazard Communication, Personal Protective Equipment, Ergonomics

### Elective chapters:

New Employee Orientation, Job Hazard Assessment, Hearing Protection, Respiratory Protection, Machine Guarding, Medical, MSDS, Monitoring, Motor Vehicle Safety, Bloodborne Pathogen Program, Ergonomics, Asbestos Awareness, Electrical Safety, Lockout-Tagout, Fall Protection, Confined Space Entry, Fire Protection/Emergencies

## Grading Scale/Student Evaluation and Policies:

Table 4 Grading Scheme (The grading scheme may be subject to a revision if it favors students)

Module	Item	Task Units	Points/unit	Total	Module Total	Module Pass (80%)
Introduction	Profile Picture	1	7	7	42	34
	CV upload	2	10	20		
	Background Survey	1	15	15		
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OSHA (OSHA 10 hr)	Assignment	10	20	200	528	422
	Presentation	2	25	50		
	In-class quiz	10	16	160		
	Mid-term	1	25	25		
	Final	1	63	63		
	In-class survey	10	3	30		
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Inspection	Inspection	3	30	90	180	144
	Report	3	30	90		
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Data Analysis	Homework	5	10	50	250	200
	Data management / entry	10	10	100		
	R code	1	50	50		
	Final report	1	50	50		
<b>Total</b>		<b>61</b>		<b>1000</b>	<b>1000</b>	

Bonus items (suggested)	Item	Hrs	Points/hr	
(max. 200)	Compost Cat OSHA class	2	10	20
	Software Carpentry	16	10	160
	Asbestos training	6	10	60
	Forklift certificate	3	10	30
	Phoenix AZ AIHA meeting	4	10	40
	Safety Video (3-5min)	2	10	20
	Inspection	3	30	90
	Presentation of Expertise	1	25	25
	Report of incorrect class material	1	5	5
	<i>Etc.</i>			

Graduate students	Item	Unit	Points	Total
	Company Health and Safety Program	1	200	200
	Presentation (20 min)	1	150	150

Final grades will be based on the following system:

- A=90-100%
- B=80-89%
- C=70-79%
- D=60-69%
- E<60 %

- Assignments, quizzes, surveys, have to be submitted on time. There are no options for late submissions. Start and End dates for submissions will be set in D2L. None-submission will be valued with 0 points.
- Bonus opportunities are available (see above suggestions); Topics and deadlines need to be discussed prior to start.
- Academic misconduct of any form will lead to loss of all points for an assignment, quiz, survey. etc.
- D2L learning management problems will be resolved for the benefit of the student

Requests for incompletes (I) and withdrawal (W) must be made in accordance with University policies University policy regarding grades and grading systems is available at: <http://catalog.arizona.edu/policy-type/grade-policies>

### **Required examinations, papers and projects:**

Final exam regulations:

<http://www.registrar.arizona.edu/staff/courses/final-exams?audience=staff&cat1=10>

Mid-term: Sep. 20 – Sep. 27<sup>th</sup>, 2017. Take home, open book, D2L multiple choice, true / false questions,

Final exam: Nov 1 – Nov 8<sup>th</sup>, 2017. Take home, open book, D2L multiple choice, true / false questions,

### **Required extracurricular activities:**

Students will conduct inspections with the UA safety inspector, after completing the theoretical module (OSHA). Safety inspections will take place within the regular class time.

### **Absence and Class Attendance/Participation:**

Attendance is required for each class. Absence will lead to zero points for that day. There will be no make up options.

Absences pre-approved by the UA Dean of Students (or Dean Designee) will be honored, <http://deanofstudents.arizona.edu/>.

The UA policy regarding absences for any sincerely held religious belief, observance or practice will be accommodated where reasonable, <http://policy.arizona.edu/human-resources/religious-accommodation-policy>.

Participation and attendance will be evaluated with in-class quizzes and in-class surveys in the last 20 mins of each class.

Safety Inspections will take place on November 8, 22, and 29<sup>th</sup>, 2017. There will be no make up inspection days.

The UA's policy concerning class attendance, participation, and administrative drops is available at: <http://catalog.arizona.edu/policy/class-attendance-participation-and-administrative-drop>

### **Course Schedule:**

Table 3 shows the estimated weekly topics and the assessments. Topics may change.

**Communications:** Each course participant is responsible for reading emails sent to his/her UA account from the instructor and the announcements that are placed on the course web site. Information about readings,



news events, your grades, assignments and other course related topics will be communicated to you with these electronic methods. The official policy can be found at: <https://www.registrar.arizona.edu/personal-information/official-student-email-policy-use-email-official-correspondence-students>

**D2L will be used for communicating with the instructor.**

### **Disability Accommodations:**

It is the University's goal that learning experiences be as accessible as possible. If a student anticipate or experiences physical or academic barriers based on disability or pregnancy, please inform the instructor, so that options can be considered. Disability Resources (520-621-3268) must be contacted to establish reasonable accommodations. For additional information on Disability Resources and reasonable accommodations, please visit <http://drc.arizona.edu/students>

### **Code of Academic Integrity**

Students are encouraged to share intellectual views and discuss freely the principles and applications of course materials. However, graded work must be the product of independent effort unless otherwise instructed. Students are expected to adhere to the UA Code of Academic Integrity, available through the office of the UA Dean Students: <http://deanofstudents.arizona.edu/policies-and-codes/code-academic-integrity>

### **Classroom Behavior:**

Present policies to foster a positive learning environment, including use of cell phones, mobile devices, etc.). Students are expected to be familiar with the UA Policy on Disruptive Student Behavior in an Instructional Setting found at: <http://policy.arizona.edu/education-and-student-affairs/disruptive-behavior-instructional-setting>

**Threatening Behavior Policy:** The UA Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to one's self, <http://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students>

### **Nondiscrimination and Anti-harassment Policy:**

The University of Arizona is committed to creating and maintaining an environment free of discrimination, <http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy>

### **UA Smoking and Tobacco Policy:**

The purpose of this Policy is to establish the University of Arizona's (University) commitment to protect the health of University faculty, staff, students, and visitors on its campuses and in its vehicles, <http://policy.arizona.edu/ethics-and-conduct/smoking-and-tobacco-policy>

### **Plagiarism:**

The following is considered plagiarism

- Copying and pasting information from a web site or another source, and then revising it so that it sounds like your original idea.
- Doing an assignment/essay/take home test with a friend and then handing in separate assignments that contain the same ideas, language, phrases, etc.
- Quoting a passage without quotation marks or citations, so that it looks like your own.
- Paraphrasing a passage without citing it, so that it looks like your own.

- Hiring another person to do your work for you, or purchasing a paper through any of the on- or off-line sources.

**Syllabus Changes:** Information contained in the course syllabus, other than the grade and absence policies, may be subject to change with reasonable advance notice, as deemed appropriate by the instructor.