Mel and Enid Zuckerman College of Public Health
University of Arizona

SYLLABUS
Introduction to Occupational Safety
EHS 422 / 522
SPRING 2020

Time: Tuesday 5:30 pm - 8:20 pm

Location: Drachman A120

Instructor(s): Boris Reiss, PhD, CIH

Contact Information: 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(s) TBD:
Risk Management Services, Research Laboratory & Safety Services,
Writing Centre, iSpace, UA Libraries

Instructor Availability:
Office hours: Mondays 4:00-5:00 pm or by appointment
Email: 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 option
D2Ldiscussion board: Preferred option

Teaching Assistant: No teaching assistant

TA Office Hours NA

Catalog Description: Fundamentals of occupational safety, emphasizing regulatory requirements and best-practices that are targeted to eliminate major sources of occupational injuries. Hazard identification, behavioral safety, and incident investigation will be discussed. Safety data will be analyzed with the statistics package R.
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:**

The Introduction to Occupational Safety 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. Safety inspection data will be analyzed with R. Students will participate in UA safety inspections, if access is available.

**Course Prerequisites:**

All students:
- BIOS376, EHS 375, or equivalent; or consent of instructor

Graduate students:
- EHS584 or equivalent; or consent of instructor

Willingness to work hard, apply scientific principles, and think critically.

Being able to read, write, type text into a computer, and do basic arithmetic.

**Course Objectives and Expected Learning Outcomes:**

**Course Objectives**

During this course students will:

1. **Identify:**
   a. components needed to provide a safe and healthful work environment through the use of 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. major historical events that influenced accident prevention activities in the pre/post industrial revolution.
   d. moral and economic consequences associated with the major classifications and causes of accidents and the cost of workers compensation associated with the risk classes of industries.
   e. the requirements for workplace training programs under the existing OSHA and State-OSHA Requirements.
   f. basic fire prevention and protection programs in the workplace.
   g. the essential elements of an occupational safety and health program required by international health and safety standard-setting organizations.

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 will be reviewed in the report.
b. a working knowledge of the occupational health and safety regulations contained in the Federal Register under the 29 CFR 1910 standards.

4. Compare:
   a. past and contemporary philosophies of safety and accident prevention.
   b. injury data from previous decades.

5. Explain:
   a. The 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, hazard control, and worker 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

**Bachelor’s Degree Foundational Domain**

This course provides:

- basic concepts of legal, ethical, economic and regulatory dimensions of health care and public health policy and the roles, influences and responsibilities of the different agencies and branches of government.

**This course provides the following cross-cutting concepts:**

- Advocacy for protection and promotion of the public’s health at all levels of society
- Ethical decision making as related to self and society
- Systems thinking
Learning Outcomes (Competencies Obtained):

Program Competencies Covered

Undergraduate Competencies
Upon completion of this course students will be able to:
• locate, use, evaluate and synthesize occupational safety information
• find applicable occupational safety legislation

MPH EOH-IH Competencies
Upon completion of this course students will be able to:

Identify agents, factors, and stressors generated by and/or associated with defined sources, unit operations, and/or processes [Weekly assignment are assessed on how students identify agents and factors of motor vehicle, walk and working, and welding safety in exam for motor vehicle, walk and working, and welding safety and in the mid-term and final exam.]

Course Notes:
Notes will be provided through D2L

Required Texts or Readings:
This class will use OSHA’s webpage. A text book maybe assigned should a suitable one be published.

Required or Special Materials:
A device to access D2L during class (i.e. laptop, tablet etc.). A laptop for R, RStudio, OpenRefine, and to install other free open source software. All devices need to be maintained by the student. The student is responsible to have a laptop where the operating system, virus scanner, etc. and all other software is up-to-date.

Course Requirements:

Tasks to be completed (subject to change) by all students:

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 (pending access to inspections)
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.

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:

**Grading Scale/Student Evaluation and Policies:**

*Table 1 Grading Scheme (The grading scheme may be subject to a revision if it favors students)*

<table>
<thead>
<tr>
<th>Module</th>
<th>Item</th>
<th>Task Units</th>
<th>Points/unit</th>
<th>Total</th>
<th>Module Total</th>
<th>Module Pass (80%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction</strong></td>
<td>Profile Picture</td>
<td>1</td>
<td>7</td>
<td>7</td>
<td>42</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>CV upload (Pre and post semester)</td>
<td>2</td>
<td>10</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Background Survey</td>
<td>1</td>
<td>15</td>
<td>15</td>
<td></td>
<td></td>
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<tr>
<td><strong>OSHA</strong></td>
<td>Assignment</td>
<td>10</td>
<td>20</td>
<td>200</td>
<td>528</td>
<td>422</td>
</tr>
<tr>
<td></td>
<td>Presentation</td>
<td>2</td>
<td>25</td>
<td>50</td>
<td></td>
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<tr>
<td></td>
<td>In-class quiz</td>
<td>10</td>
<td>16</td>
<td>160</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mid-term</td>
<td>1</td>
<td>25</td>
<td>25</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Final</td>
<td>1</td>
<td>63</td>
<td>63</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In-class survey</td>
<td>10</td>
<td>3</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Inspection</strong></td>
<td>Inspection and/or Analysis</td>
<td>3</td>
<td>30</td>
<td>90</td>
<td>180</td>
<td>144</td>
</tr>
<tr>
<td></td>
<td>Report</td>
<td>3</td>
<td>30</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Data Analysis</strong></td>
<td>Homework</td>
<td>5</td>
<td>10</td>
<td>50</td>
<td>250</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>Data management / entry</td>
<td>10</td>
<td>10</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>R code</td>
<td>1</td>
<td>50</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Final report</td>
<td>1</td>
<td>50</td>
<td>50</td>
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<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
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<td></td>
<td></td>
<td>61</td>
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**Bonus items (suggested)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Hrs</th>
<th>Points/hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compost Cat OSHA class</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Software Carpentry</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>Asbestos training</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Forklift certificate</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>AZ-AIHA meetings</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Safety Video (3-5min)</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Inspection</td>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td>Presentation of Expertise</td>
<td>1</td>
<td>25</td>
</tr>
<tr>
<td>Report of incorrect class</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>material</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Etc.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Graduate students**

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
<th>Points</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company Health and Safety Program</td>
<td>1</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Presentation (TBD)</td>
<td>1</td>
<td>150</td>
<td>150</td>
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</table>
Final grades will be based on the following system:

<table>
<thead>
<tr>
<th>Grades</th>
<th>Undergraduates (Points)</th>
<th>Graduates (Points)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A = 90 – 100%</td>
<td>900 - 1000</td>
<td>1215 – 1350</td>
</tr>
<tr>
<td>B = 80 – 89%</td>
<td>800 - 899</td>
<td>1080 - 1214</td>
</tr>
<tr>
<td>C = 70-79%</td>
<td>700 - 799</td>
<td>945 - 1079</td>
</tr>
<tr>
<td>D = 60 – 69%</td>
<td>600 - 699</td>
<td>810 - 944</td>
</tr>
<tr>
<td>&lt; 60%</td>
<td>&lt; 600</td>
<td>&lt; 810</td>
</tr>
</tbody>
</table>

- **ALL** modules must be passed. The pass mark is 80%.
- Grades are **not** subject to discussion. Grades need to be earned.
- Students are required to read and follow the assignment instructions. 10% of an assignment grade will be deducted each time if students fail to read and follow the instructions and choose instead to contact the instructor for clarification.
- Assignments, quizzes, and survey reports must be submitted on time. There are no options for late submissions. Start and End dates for submissions will be set in D2L. Non-submission will be graded at 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](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](http://www.registrar.arizona.edu/staff/courses/final-exams?audience=staff&cat1=10)

Mid-term: Week 5, Take home, open book, D2L multiple choice, true / false questions, etc.
Final exam: Week 11, Take home, open book, D2L multiple choice, true / false questions, etc.

**Required extracurricular activities:**

Students will conduct inspections with the UA safety inspector in groups of 5, if inspections are available. Inspections will be scheduled starting after about 4 weeks. Safety inspections will take place outside the regular class time. Equivalent safety inspections at other organizations could be used with prior instructor permission.

**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/](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](http://policy.arizona.edu/human-resources/religious-accommodation-policy).

Participation and attendance will be evaluated with in-class quizzes and in-class surveys.

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](http://catalog.arizona.edu/policy/class-attendance-participation-and-administrative-drop)

**Course Schedule:**
**Error! Reference source not found.** 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](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.**
D2L discussion boards are the preferred means of communication with the instructor. Questions send to the instructor by email will be posted and answered on a D2L discussion boards if the question is important for all students.

**Accessibility and Accommodations:**
At the University of Arizona, we strive to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, you are welcome to let me know so that we can discuss options. You are also encouraged to contact Disability Resources (520-621-3268) to explore reasonable accommodation. If our class meets at a campus location: Please be aware that the accessible table and chairs in this room should remain available for students who find that standard classroom seating is not usable. For additional information on Disability Resources and reasonable accommodations, please visit [http://drc.arizona.edu/students](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](http://deanofstudents.arizona.edu/policies-and-codes/code-academic-integrity)

**Classroom Behavior:**
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](http://policy.arizona.edu/education-and-student-affairs/disruptive-behavior-instructional-setting). Cell phone usage in class room or leaving the classroom to take a call without the instructor’s permission prior to class will lead to expulsion.
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.
## Course schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Assessment</th>
<th>Safety Topic (order can change)</th>
</tr>
</thead>
</table>
| 1    | • In class quiz | • Introduction to OSHA, Workers Compensation,  
|      |             | • The OSHAct, Standards, and Liability  
|      | • Assignment 1 | • OSHA Record Keeping  
|      | • Presentation | • OSHA Inspections, Violations, Citations, Appeals  
|      | • In class quiz | • Accidents and Their Effects, Consensus Standards,  
|      |             | • Theories of Accident Causation  
| 2    | • Assignment 2 | • Late Night retail  
|      | • Presentation | • Motor Vehicle Safety  
|      | • In class quiz | • Uniform Building Codes, International Building Codes,  
|      |             | • Falling Hazards  
| 3    | • Assignment 3 | • Walking and Working Surfaces (1910.22)  
|      | • Presentation | • Machine Guarding (1910.212)  
|      | • In class quiz | • Lockout-Tagout 1910.147  
|      |             | • Electrical Hazards (Subpart S)  
| 4    | • Assignment 4 | • Fire and Emergency Egress  
|      | • Presentation | • Confined Spaces (1910.146)  
|      | • In class quiz | • Welding Safety  
|      | • Midterm | • Ergonomic Hazards and Repetitive Strain  
| 5    | • Assignment 5 | • Noise 1910.95  
|      | • Presentation | • Respiratory Protection (1910.134)  
|      | • In class quiz | • Chemical Hazard Communication, MSDS (1910.1200)  
|      |             | • Asbestos  
| 6    | • Assignment 6 | • Storage of Flammable Materials, Fire Codes  
|      | • Presentation | • Bloodborne Pathogens (1910.130)  
|      | • In class quiz | • Industrial Hygiene (PELs) (1910.1000)  
|      |             | • Process Safety Management 1910.119  
| 7    | • Assignment 7 | • Forklift Safety (1910.178)  
|      | • Presentation | • Personal Protective Equipment (1910.132)  
|      | • In class quiz | • PPE Hazard Assessment  
|      |             | • Hard Hats, Safety Glasses, Harnesses, Safety Boots/ ANSI  
| 8    | • Assignment 8 | • Emergency Eyewash  
|      | • Presentation | • Heat Stress  
|      | • In class quiz | • Ladder Safety  
|      |             | • Scaffold Safety  
| 9    | • Assignment 9 | • Accident and Incident Investigation  
|      | • Presentation | • Root Cause Analysis  
|      | • In class quiz | • Accident Prevention  
|      |             | • Violence Prevention  
| 10   | • Assignment 10 | • Grad. students: Acc. Prev. Program  
|      | • Final exam, take home, open book | •  
|      | • Grad. students: Acc. Prev. Program |   
| 11   | • Inspection Form/Report | Small group safety inspections will be coordinated with an UA Health and safety inspector. Inspections will take place mostly outside of regular class hours. Equivalent safety inspections at other organizations could be used with prior instructor permission.  
| 12   | • Inspection Form/Report |   
| 13   | • Inspection Form/Report |   
| 14   | • Inspection Form/Report |   
| 15   | • Data analysis - code | R, Rmarkdown, OpenRefine, KNIME and other data analysis tools will be introduced and used in parallel to the safety topics throughout the course.  
| 16   | • Inspection Report |   