SYLLABUS
Physical Exposures EHS 510
Spring 2021

Time: Monday, 9-11:50am
Location: Flex in person: Live online (https://arizona.zoom.us/j/82245133358)
& Drachman Hall, Room A120

Instructor and Contact Information: Stephanie Griffin, Ph.D. CIH
MEZCOPH/CEP
Office: Drachman Hall, Room A241
Phone: (520) 626-9363
Email: scgriffin@email.arizona.edu

Office Hours: Wednesday, 10:30am-12:30pm (https://arizona.zoom.us/j/87944033181) or by appointment

Teaching Assistant: None

Catalog Description: Participants will understand the health effects, evaluate exposures, and identify control options available to reduce exposures to physical stressors in the environment. The course focuses on noise, heat stress, vibration, radiation and ergonomics.

Course Prerequisites: None. For all students, it is recommended that you have taken a college level general chemistry class (at least at the Chem 103 level), introductory statistics (e.g., CPH 376), and algebra class (e.g., Math 112).

Course Objectives and Expected Learning Outcomes:

Course objectives
1. Anticipate and recognize the major types of physical exposure stressors capable of inducing disease in occupational populations.
2. Understand the basic strategies for evaluating or measuring exposure agents and health effects and relating these measurements to permissible exposure and other regulatory and recommended limits. This will include hands-on use of some of the equipment typically used to evaluate these hazards.
3. Appreciate techniques for controlling exposures to physical agents.
4. Appreciate some of the ethical and economic challenges to controlling physical exposures in the workplace.

At the end of this course, students will be able to (expected learning outcomes):
5. Anticipate, recognize, evaluate and develop control plans for the major types of physical exposure stressors capable of inducing disease in occupational populations, including thermal stress, radiation and noise.
6. Understand the physiological effects of physical exposures.
7. Specify correct PPE for physical exposures.
8. Correctly apply legal standards to physical exposures in the workplace.
**Course Notes:** You are expected to take your own notes on the readings/videos/podcasts you will complete outside of class. It is also recommended that you take notes in class, during discussions and group activities. If feasible, the results of discussions/activities will be posted on D2L following the class. Additional content or printed material may be distributed in class. These materials will be posted on the D2L site under the appropriate class date/subject heading.

**Required Text/Readings:** Our textbooks/resources for the course are outlined below:

1. OH Learning texts - available on D2L
2. Quantitative Industrial Hygiene: A Formula Workbook (J. Caravanos) – provided for your use
3. CAOHC Hearing Conservation Manual Fifth Edition (Hutchison and Schulz, Editors) – provided for your use.

Other recommended references:


Other assigned readings will be provided as well, usually on D2L. Any required readings not on the syllabus will be announced and made available a week in advance.

**Required or Special Materials:** Students wishing to complete the Certification in Occupational Hearing Conservation through CAOHC will be required to pay the CAOHC exam fee. More details about this will be shared in class.

**Course Requirements:**

1. **Active learning** – This is not a lecture-based course. You will be expected to come to class prepared, having already read the assigned material (or watched any assigned videos or listened to any assigned podcasts), and with your homework or writing assignments completed, to the best of your ability. We will spend most of our in-class time engaged in discussions, doing activities and group work that will reinforce what you learned in the readings/videos/podcasts. If you are expecting to sit quietly in your chair and listen to me speak for 3 hours a week, you may find yourself frustrated and disappointed.

2. **Community** - Your fellow students will be relying on you to be prepared and not hold them back in their learning process. Your part of the bargain in this learning environment is to bring your best effort to this course. My part of the bargain is to provide you with interesting, inspiring and exciting learning opportunities, and to help create an environment that helps you reach your potential. Please consider dropping this course if you are not prepared to give it your best. If, however, you are ready to learn and engage with others in a very interesting subject, I believe you will find your experience in this course very rewarding.

3. **Perspective** – This course is designed to train industrial hygienists (IH) professionals. While this might not describe you (yet), you will use this perspective when completing assignments and during in-class discussions.

4. **Time investment** – The “rule of thumb” for college courses is that students will spend 3-4 hours on course work for each hour of in-class instruction. We will meet for approximately 45 required hours. You will spend an additional 135 to 180 total hours of your own time preparing for class. That averages out to approximately 8 to 11 hours per week, outside of class.
You are expected to come to class prepared, respond to questions and participate in discussions, submit homework and assignments on time, and successfully complete any work given during scheduled classes. Changes and other information about the class will be posted on D2L and/or mailed to your University of Arizona e-mail address through D2L.

**Grading Scale/Student Evaluation and Policies:**
Final grades will be based on the following point system:

<table>
<thead>
<tr>
<th>Task</th>
<th>Potential Points</th>
<th>% of Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific article reviews x 3</td>
<td>10 each</td>
<td>30</td>
</tr>
<tr>
<td>Quantitative IH Workbook – 3 chapters</td>
<td>10 each</td>
<td>30</td>
</tr>
<tr>
<td>In-class quizzes</td>
<td>15*</td>
<td>10</td>
</tr>
<tr>
<td>Non-ionizing radiation/EM spectrum group assignment and presentation</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>UA-RLSS Laser Radiation Protection Course certificate</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>UA-RLSS Radioactive Material Protection Course certificate</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>105</td>
<td>100%</td>
</tr>
</tbody>
</table>

A: >89.5%; B: 79.5-89.4%; C: 69.5-79.4%; D: 59.5-69.4%; F: <59.5%

*Five bonus points built into in-class quizzes

**Due Dates for assignments and Exam Dates are designated on the syllabus.** Do not rely on dropbox dates and times. These are sometimes inaccurate.

All late assignments will be penalized 10% per day, beginning at the end of the class on the day the assignment is due. For example, if the assignment is due in class on a Monday, it will be marked down 10% if it is turned any time Monday after class. Please contact Dr. Griffin in advance if you know you will be absent to arrange for an alternative time to turn in the assignment. Exams must be completed during the specified time. There will be no make-up exams.

Academic misconduct (i.e., cheating, plagiarism) will be penalized with a grade of zero points for the assignment.

**Absence and Class Attendance/Participation:** Students are expected to attend every class meeting and participate in class discussions and activities. Students will participate in small group discussions on a regular basis.

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)

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).

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

**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).

**400/500 Co-Convened Courses:** N/A
Required examinations, papers and projects: Required assignments are outlined above and in the course calendar below. Dates for in-class quizzes are not specified and may occur during any class period. Note: The University’s Final Exam regulations can be found here: http://www.registrar.arizona.edu/staff/courses/final-exams?audience=staff&cat1=10

Required extracurricular activities: None. Payment for and completion of the CAOHC Occupational Hearing Conservation materials/certification is optional and will be coordinated with the instructor (Dr. Griffin).

Course Schedule: See below.

Communications: You are responsible for reading emails sent to your UA account from your 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.

Accessibility and Accommodations: At the University of Arizona, we strive to make learning experiences as accessible as possible. If you anticipate or experience barriers based on disability or pregnancy, please contact the Disability Resource Center (520-621-3268, https://drc.arizona.edu) to establish reasonable accommodations.

Code of Academic Integrity: Students are encouraged to share intellectual views and discuss freely the principles and applications of course materials. However, graded work/exercise 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: Computers, tablets, cell phones, etc. use will be permitted during class for the purposes of locating information for discussions and activities when appropriate (the instructor will tell you when), provided the technology is being used to aid in the learning process. Use for entertainment or unrelated activities (email, games, social media, Youtube, TV/movies, etc.) is prohibited during class time. Appropriate use will be passively monitored by the instructor and TA. This policy is subject to revision if the technology privilege is consistently misused. Please turn your cell phone on vibrate or silent mode to avoid unnecessary interruption.

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 campuses and in its vehicles. The official policy can be found at: http://policy.arizona.edu/ethics-and-conduct/smoking-and-tobacco-policy
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.

Grievance Policy: Should a student feel he or she has been treated unfairly, there are a number of resources available. With few exceptions, students should first attempt to resolve difficulties informally by bringing those concerns directly to the person responsible for the action, or with the student's graduate advisor, Assistant Dean for Student and Alumni Affairs, department head, or the immediate supervisor of the person responsible for the action. If the problem cannot be resolved informally, the student may file a formal grievance using the Graduate College Grievance Policy found at: http://grad.arizona.edu/academics/policies/academic-policies/grievance-policy.

Grade Appeal Policy: http://catalog.arizona.edu/2015-16/policies/gradappeal.htm

University Course Policies: (please see the following URL): https://academicaffairs.arizona.edu/syllabus-policies

Plagiarism: What counts as 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.

References: Several of the assignments require you to use references. Wikipedia is an acceptable “first look” resource but for written assignments, do not use Wikipedia as a primary source. You must go deeper, preferably using The University of Arizona library resources.

MEZCOPH Committee on Inclusion and Equity - Optional Syllabus Language

Gender Pronoun Guideline
It is recommended that instructors address, in one way or another, pronoun usage in their classroom, and that this be done the first day of class. It can be done in a fashion each instructor prefers, but for many, the following statement could work:

“It is already UA policy that class rosters are provided to instructors with a student’s preferred name. Students may share their preferred name and pronoun with members of the teaching staff and fellow students, as desired, and these gender identities and gender expressions will be honored in this course. As the course includes group work and in-class discussion, it is critical to create an educational environment of inclusion and mutual respect. In this class, to be inclusive of all gender identities and expressions, students will be referred to by their first or last names, the pronoun of their choice, or by default, the pronoun “they”.

The application of this guideline in all instructional settings involving group interactions is strongly encouraged, but the means of carrying it out are left to each faculty member.

Pandemic information
- This class is scheduled to be taught in the FLEX IN-PERSON modality.
● Meeting times for remote teaching: We will be meeting remotely until the University notifies us that in-person meetings may commence. During this period, we will meet during our regularly scheduled class time via Zoom to do lecture and small group activities.

● Meeting times and patterns for in-person teaching: When the COVID-19 situation permits teaching on campus, our in-class meetings will give us the opportunity to expand on our group discussions and get to know one another better. In addition, you will complete group activities per the course calendar on your own time to accomplish the course learning objectives.

● Face coverings are required in our classroom: Per UA’s Administrative Directive, face coverings that cover the nose, mouth, and chin are required to be worn in all learning spaces at the University of Arizona (e.g., in classrooms, laboratories and studios). Any student who violates this directive will be asked to immediately leave the learning space, and will be allowed to return only when they are wearing a face covering. Subsequent episodes of noncompliance will result in a Student Code of Conduct complaint being filed with the Dean of Students Office, which may result in sanctions being applied. The student will not be able to return to the learning space until the matter is resolved.

● Physical distancing is required in our classroom: During our in-person class meetings, we will respect CDC guidelines, including restricted seating to increase physical distancing and appropriately-worn face coverings. Per UA’s Administrative Directive, face coverings that cover the nose, mouth, and chin are required to be worn in all learning spaces at the University of Arizona (e.g., in classrooms, laboratories and studios). Any student who violates this directive will be asked to immediately leave the learning space, and will be allowed to return only when they are wearing a face covering. Subsequent episodes of noncompliance will result in a Student Code of Conduct complaint being filed with the Dean of Students Office, which may result in sanctions being applied. The student will not be able to return to the learning space until the matter is resolved.

○ The Disability Resource Center is available to explore face coverings and accessibility considerations if you believe that your disability or medical condition precludes you from utilizing any face covering or mask option. DRC will explore the range of potential options as well as remote course offerings. Should DRC determine an accommodation to this directive is reasonable, DRC will communicate this accommodation with your instructor.

● Classroom attendance:
  ○ If you feel sick, or may have been in contact with someone who is infectious, stay home. Except for seeking medical care, avoid contact with others and do not travel.
  ○ Notify your instructor(s) if you will be missing an in person or online course.
  ○ Campus Health is testing for COVID-19. Please call (520) 621-9202 before you visit in person.
  ○ Visit the UArizona COVID-19 page for regular updates.

● Academic advising: If you have questions about your academic progress this semester, or your chosen degree program, please note that advisors at the Advising Resource Center can guide you toward university resources to help you succeed.

● Life challenges: If you are experiencing unexpected barriers to your success in your courses, please note the Dean of Students Office is a central support resource for all students and may be helpful. The Dean of Students Office can be reached at 520-621-2057 or DOS-deanofstudents@email.arizona.edu.

● Physical and mental-health challenges: If you are facing physical or mental health challenges this semester, please note that Campus Health provides quality medical and mental health care. For medical appointments, call (520-621-9202. For After Hours care, call (520) 570-7898. For the Counseling & Psych Services (CAPS) 24/7 hotline, call (520) 621-3334.

● Exams: Exams and quizzes are delivered by D2L.

● Equipment and software requirements: For this class you will need daily access to the following hardware: laptop or web-enabled device with webcam and microphone; regular access to reliable internet signal; ability to download and run the following software: web browser, Adobe Acrobat, Microsoft applications.
● Staying current: You are required to meet all the expectations and deadlines laid out in this syllabus.
● Remain flexible: If pandemic conditions warrant, the University may require that we return to remote operations. If that is the case, we will notify you by D2L and email.
● Remote / online only after Thanksgiving: After the Thanksgiving holiday, we are scheduled to move to remote teaching. That means that we will meet via zoom for lecture and group work during our scheduled class time.
● Class Recordings:
  ○ If course recordings are made, I will notify students, and work with you if you do not wish to be identified by name.
  ○ For lecture recordings, which are used at the discretion of the instructor, students must access content in D2L only. Students may not modify content or re-use content for any purpose other than personal educational reasons. All recordings are subject to government and university regulations. Therefore, students accessing unauthorized recordings or using them in a manner inconsistent with UArizona values and educational policies are subject to suspension or civil action.
# COURSE SCHEDULE:

<table>
<thead>
<tr>
<th>Session</th>
<th>Month</th>
<th>Date</th>
<th>Unit/Topic</th>
<th>Before Class Assignment (reading, etc.)</th>
<th>Due / Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan</td>
<td>18</td>
<td>MLK day – no class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Jan</td>
<td>25</td>
<td>Course Introduction</td>
<td>OH Learning Basic Principles in Occupational Hygiene Chapter 18 (Intro to Ergonomics) Chapter 13 (Noise) Chapter 14 (Vibration) ACGIH TLV Physical Agents Introduction (link on D2L)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Feb</td>
<td>8</td>
<td>Non-ionizing radiation (Leon Harris)</td>
<td>OH Learning Basic Principles in Occupational Hygiene Chapter 16 Intro to Lighting and Non-ionizing Radiation (page 147-154) and Chapter 17 Ionizing Radiation (pages 155-163) UA RLSS Ionizing and Non-Ionizing Radiation training courses (LASER Radiation Protection Course and Radioactive Material Protection Course) **See detailed instructions on last page of syllabus</td>
<td>Group presentations on non-ionizing radiation due in class</td>
</tr>
<tr>
<td>5</td>
<td>Feb</td>
<td>15</td>
<td>Laser and Ionizing radiation (Leon Harris)</td>
<td></td>
<td>Quantitative Industrial Hygiene Formula Workbook Chapter 5 (Ionizing an Non-ionizing Radiation)</td>
</tr>
<tr>
<td>6</td>
<td>Feb</td>
<td>22</td>
<td>Occupational Hearing Conservation</td>
<td>Introduction to hearing conservation &amp; CAOHC Chapters 1 &amp; 3 Effects of noise and hearing conservation principles Chapter 2</td>
<td>Scientific article review 1</td>
</tr>
<tr>
<td>7</td>
<td>Mar</td>
<td>1</td>
<td>Occupational Hearing Conservation</td>
<td>Physics of sound; Standards and Regulations Chapters 6 &amp; 7</td>
<td>Materials on D2L: ● “Logarithms refresher” ● “Noise terminology &amp; calculations” ● “Noise exercises” (you will use the “solutions” document to help you)</td>
</tr>
<tr>
<td>8</td>
<td>Mar</td>
<td>8</td>
<td>Occupational Hearing Conservation (Dylan Staack)</td>
<td>Noise measurement and control, Chapter 8</td>
<td>CAOHC noise measurement video series</td>
</tr>
<tr>
<td>9</td>
<td>Mar</td>
<td>15</td>
<td>Occupational Hearing Conservation</td>
<td>ACGIH TLV video “ACGIH_18OCT17 UpdatedTLVAudibleSound”</td>
<td></td>
</tr>
<tr>
<td>Session</td>
<td>Month</td>
<td>Date</td>
<td>Unit/Topic</td>
<td>Before Class Assignment (reading, etc.)</td>
<td>Due / Exam</td>
</tr>
<tr>
<td>---------</td>
<td>-------</td>
<td>------</td>
<td>------------</td>
<td>-----------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>10</td>
<td>Mar</td>
<td>22</td>
<td>Occupational Hearing Conservation</td>
<td>Noise measurement and control, Chapter 8&lt;br&gt;Petrick et al. (on D2L)</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Mar</td>
<td>29</td>
<td>Occupational Hearing Conservation</td>
<td>Anatomy and physiology of the ear (video), Chapter 4&lt;br&gt;Causes and management of hearing disorders, Chapter 5&lt;br&gt;Non-auditory effects of noise: Basner et al. (on D2L)&lt;br&gt;Cantley et al. (on D2L)&lt;br&gt;Intro to audiometric testing</td>
<td>Scientific article review 2</td>
</tr>
<tr>
<td>12</td>
<td>Apr</td>
<td>5</td>
<td>Student presentations with ASSP local chapter</td>
<td>9-10am – Review Quant IH Chapter 4 problems; continue our Intro to audiometric testing lecture&lt;br&gt;10-1145am - Student research presentations with ASSP local chapter</td>
<td>Quantitative Industrial Hygiene Formula Workbook Chapter 4 (Noise)</td>
</tr>
<tr>
<td>13</td>
<td>Apr</td>
<td>12</td>
<td>Occupational Hearing Conservation</td>
<td>The audiometric program &amp; Understanding audiograms Chapters 9 &amp; 10&lt;br&gt;** Audiometric practicum – ½ students</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Apr</td>
<td>19</td>
<td>Occupational Hearing Conservation</td>
<td>The audiometric monitoring program and the “problem audiogram” Chapters 11 &amp; 12&lt;br&gt;**Audiometric practicum – ½ students</td>
<td>Scientific article review 3</td>
</tr>
<tr>
<td>14</td>
<td>Apr</td>
<td>26</td>
<td>Occupational Hearing Conservation</td>
<td>Hearing protection devices Chapters 13 &amp; 14&lt;br&gt;**HPD Practicum</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>May</td>
<td>3</td>
<td>Occupational Hearing Conservation</td>
<td>Training and Motivation Recordkeeping and Program Evaluation Chapters 15 &amp; 16</td>
<td>OHC standardized exam – 1030-1130am</td>
</tr>
</tbody>
</table>