Location: Online, asynchronous

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Guest Lecturers
TBD

Office Hours: By appointment

Course Description:

Illnesses related to environmental exposures are on the rise but frequently misdiagnosed due to a lack of understanding of the complexities of multiple hazard exposures and variable health outcomes. This course provides an overview of common and emerging Environmentally Acquired Illnesses (EAI) and explores the multitude of hazards, conditions, and predisposing factors related to human disease. Students will learn how to identify gaps in the current model of patient evaluation and treatment. In addition, they will critique current research design and gain hands on experience in developing a systems approach to understanding, evaluating, and communicating the impact and control of EAI relative to human health.

Course Prerequisites: None

Course Objectives and Expected Learning Outcomes:

1. **Course Objectives:** During this course students will:
   - Specify emerging environmentally acquired illnesses (EAI) and related outcomes
   - Describe barriers to diagnostics and treatment of EAI
   - Evaluate the current state of research and future study design
   - Develop outreach tools for EAI awareness and assessment
2. **Undergraduate Learning Domains**
   - Foundations of scientific knowledge, including the biological and life sciences and the concepts of health and disease.

**Undergraduate Foundational Domains**
- The underlying science of human health and disease, including opportunities for promoting and protecting health across the life course.
- The socioeconomic, behavioral, biological, environmental and other factors that impact human health and contribute to health disparities

**Undergraduate Foundational Competencies**
- The ability to locate, use, evaluate, and synthesize public health information.

**Undergraduate Cross-Cutting Concepts and Experiences**
- Critical thinking and creativity
- Research methods
- Systems thinking

3. **Graduate Student Learning Outcomes (Competencies Obtained):**
   Upon completion of this course students will be able to:

**MPH Level EOH Competencies**
- Recognize and classify the major types of chemical, physical and biological exposure agents capable of inducing disease in the public.
- Utilize basic strategies for evaluating or measuring exposure to chemical, physical and biological agents.
- Identify control methods for reducing worker or public exposures to acceptable levels.
- Utilize various sources of information to identify chemicals commonly employed in industry and their toxicity.
- Describe the base mechanism of toxicity and potential health effects and diseases caused by various chemical agents.
- Identify the steps involved in environmental and occupational health research.

**MS Level EHS Competencies**
- Demonstrate fundamental knowledge of the principles of environmental health sciences and be able to apply them.
- Implement assigned research or work tasks including, data collection and management, evaluation, and data analysis.
- Identify and communicate to the appropriate people the need for resources to minimize health and safety risks.
- Identify barriers that impact project completion and communicate them effectively to the appropriate people.
- Develop effective written and oral communication skills.

**PhD Level EHS Competencies**
- Develop new, innovative, applied or theoretical knowledge through research of health related issues.
- Develop expertise in an environmental health science subspecialty.

**Course Notes:** You are expected to take your own notes as you actively read required content, distill major themes and identify relationships between multiple concepts. Interactive material may include readings/videos/podcasts. Other notes may be posted on D2L.
**Required Texts or Readings:** Students will be assigned a variety of readings at the beginning and throughout the semester. Most will be supplied for you but some may require purchase from local or online retailers. Any required readings not on the syllabus will be announced and made available a week in advance.

**Course Requirements:** Following the ideals of Bloom’s Taxonomy, *(Bloom, B., ed. 1956. *Taxonomy of Educational Objectives: The Classification of Educational Goals. Handbook I: Cognitive Domain. New York, NY: Longman)* this course is designed toward learner proficiency in analysis, evaluation, synthesis, and creation. Assignments and hands-on exercises are designed to promote higher forms of critical thinking that will lead to the application of learned principles, rather than rote memorization of facts. Students will be encouraged to build on course foundational concepts and engage in new innovative thinking strategies.

You are expected to read the assigned chapters before watching lectures, respond to questions on discussion boards, submit homework and assignments on time, take exams on the specified dates, coordinate research and presentation tasks with your assigned group and successfully complete any work given. Changes and other information about the class will be mailed to your University of Arizona e-mail address through D2L. It is your responsibility to forward or regularly check this e-mail.

1) **Active learning**- You will be expected to prepare before discussions, having already read the assigned material (or watched any assigned videos or listened to any assigned podcasts). Assignments and discussions will reinforce what you learned in the readings/videos/podcasts.

2) **Community** - Your fellow students will be relying on you to be prepared and not hold them back in their learning process. You are expected to bring your best effort to this course. The topic of this course is on the cutting edge of scientific research and understanding, with many unproven hypotheses and inconsistent research results. You are expected to keep an open mind and explore data gaps while respecting the scientific process and considering individual outcome differentials. We will work to provide you with interesting, inspiring and exciting learning opportunities, and to create an environment that helps you reach your learning and critical thinking potential.

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.

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

**Due Dates** for assignments are designated in D2L. **Late assignments will not be accepted.** No credit will be given for assignments not completed on time.

**Self-Evaluations:** Prior to undertaking a new educational opportunity, it is useful to perform a personal assessment of what you know about the topic. The goal is to learn more through personal investment throughout the semester. At the end of the course it is useful to look at what you learned and assess personal progress. To encourage this behavior, 15 points are awarded for both the initial and final personal assessment.

**Examinations:** Students will be expected to demonstrate that they have met the course objectives through homework assignments and examinations. Two exams will be given (1 midterm and 1 final). Exams will consist of multiple choice, short answer and short essay questions. Self-evaluations or take-home questions may also be assigned with designated due dates listed on the assignment. It is your responsibility to clear your calendar and take the exams at the scheduled time.
Except for emergency situations (e.g., medical, supported by appropriate documentation), make-up exams will not be given and zero credit will be awarded for missed exams.

**Power Point Presentations/Reflections:** Throughout the semester students will be assigned to lead an online presentation and discussion of assigned readings or other content. Readings and reflections will be assigned weekly. Students will sign up for their preferred presentation date/topic and will be assigned to reflect on other student presentations throughout the semester. Each effort will be assessed up to 25 points based on completion, and demonstration of knowledge and critical thinking.

**Weekly Assessment Quizzes:** Students are expected to complete readings and assessment quizzes approximately weekly and for every reading or video assignment.

**Class Attendance/Participation:** Students are expected to engage online weekly and participate in discussions or other posted activities. Additional activities may be assigned throughout the semester and graded as participation points.

**400/500 Co-Convened Courses:** Graduate students are expected to be more analytical in their assignments and to think more critically about the questions. Graduate students are expected to exercise a higher level of critical thinking by moving beyond memorization and toward deeper understanding, application and further into analysis, evaluation and creative expression (based on Blooms taxonomy). As such, graduate students will have a greater involvement/expectation in class and discussion forums, requiring increased depth of response and will also be required to meet more frequently as a team and with the instructor/TA to complete assignments. Graduate students are further expected to independently seek out new thought concepts related to weekly topics and bring ideas/discussion to share with the class via an in depth investigation of the literature beyond introduced concepts introduced.

**Grading:** The point allocation/grading scheme follows:

<table>
<thead>
<tr>
<th>Task</th>
<th>Potential Points</th>
<th>Grades Awarded</th>
<th>Accumulated Point Range for Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Self-assessment</td>
<td>15</td>
<td>A</td>
<td>&gt;90%</td>
</tr>
<tr>
<td>2 Exams @ 100 pts ea</td>
<td>200</td>
<td>B</td>
<td>80% to &lt;90%</td>
</tr>
<tr>
<td>3 Paper presentations @ 25 pts ea</td>
<td>75</td>
<td>C</td>
<td>70% to &lt;80%</td>
</tr>
<tr>
<td>Weekly assessment quizzes @ 10 pts ea</td>
<td>200</td>
<td>D</td>
<td>60% to &lt;70%</td>
</tr>
<tr>
<td>Discussion/participation 12 @ 5 pts ea</td>
<td>60</td>
<td>E</td>
<td>&lt;60%</td>
</tr>
<tr>
<td>Wrap-up Self-assessment</td>
<td>15</td>
<td></td>
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<tr>
<td>Total points</td>
<td>565</td>
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**Additional Information:**

**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](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 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

**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

Consequences for any type of academic misconduct may include loss of points or zero grade for the assignment, or a failing course grade. 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

**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

**Other 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.

**Course Schedule:**

<table>
<thead>
<tr>
<th>Week</th>
<th>Activity/Topic</th>
<th>Assignment(s)</th>
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<tbody>
<tr>
<td>1</td>
<td>Course structure/syllabus; Introduction to EAI and Risk paradigm</td>
<td>Initial self-assessment, Readings</td>
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<tr>
<td>2</td>
<td>Overview of EAI's- predispositions</td>
<td>Readings, Quiz</td>
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<tr>
<td>3</td>
<td>Physiological pathways</td>
<td>Readings, Quiz</td>
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<tr>
<td>4</td>
<td>Diagnostics/testing</td>
<td>Paper presentations</td>
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<td>5</td>
<td>Treatment</td>
<td>Readings, Quiz</td>
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<tr>
<td>6</td>
<td>Holistic health</td>
<td>Readings, Quiz</td>
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<tr>
<td>7</td>
<td>Case studies</td>
<td>Readings, Quiz</td>
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<tr>
<td>8</td>
<td>MIDTERM EXAM</td>
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<tr>
<td>Topic</td>
<td>Activity</td>
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<tr>
<td>Microbiome</td>
<td>Paper presentations</td>
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<td>Exosome</td>
<td>Readings</td>
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<td></td>
<td>Quiz</td>
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<tr>
<td>Case studies</td>
<td>Readings</td>
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<td></td>
<td>Quiz</td>
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<tr>
<td>Environmental exposure routes</td>
<td>Readings</td>
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<td></td>
<td>Quiz</td>
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<tr>
<td>Monitoring/Test labs</td>
<td>Readings</td>
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<td></td>
<td>Quiz</td>
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<tr>
<td>Remediation/Avoidance</td>
<td>Paper presentations</td>
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<tr>
<td>Case studies</td>
<td>Readings</td>
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<td></td>
<td>Quiz</td>
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<tr>
<td>Social Support/Advocacy/Compassionate care</td>
<td>Final self-assessment</td>
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<td></td>
<td>Exam review</td>
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**FINAL EXAM**