



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

**SYLLABUS**

**Introduction to Human Health Risk Assessment  
EHS 418/518  
ENVS 418/518  
Fall 2017**

- Time:** Monday  
Online, self-paced
- Wednesday  
9:00 am-10:15 am
- Location:** Drachman Hall, A114, Wednesday only
- Instructor/Coordinator:** Kelly A. Reynolds, MSPH, PhD  
Office: Drachman Hall, A233,  
Phone: (520) 626-8230  
Email: [Reynolds@email.arizona.edu](mailto:Reynolds@email.arizona.edu)
- TAs:** Elkana Kurgat, MS  
Office: MRB cubicles across from office 114  
Email: [ElkanaKurgat@email.arizona.edu](mailto:ElkanaKurgat@email.arizona.edu)
- Jamaica Dillard, BS  
Office: Student cubicles, Drachman Hall, second floor  
Email: [JamaicaD@email.arizona.edu](mailto:JamaicaD@email.arizona.edu)
- Office Hours:** Dr. Reynolds: Wednesdays 10:30 am-12:00 pm, appointment needed  
Elkana Kurgat: Thursdays 10 am-11 am  
Jamaica Dillard: Fridays 11 am- 12 pm

\*The best way to get in touch with us is via email. Please allow 1 business day for a response. If you do not hear from us within the expected time, please resend your email.

**Web Information:** Readings, lecture slides, videos, homework assignments and other information relative to the course will be posted at The University of Arizona D2L (desire to learn) site, [D2L.arizona.edu](http://D2L.arizona.edu) . Be sure to check the site regularly for updated information. New content will be posted every Friday before 5 pm.

**Catalog Description:** The purpose of this course is to enhance students' knowledge and skills related to environmental risk assessment, including hazard assessment, exposure assessment, toxicity assessment, and risk characterization.

**Course Description:** Evaluation of environmental hazards and assessment of chemical and microbial exposures in various populations and the probability of associated health effects on the human population or the environment. This course is a hybrid format. A portion of the course will be taught online (Monday sessions, self-paced). Wednesday sessions are required face-to-face discussion forums. We will not meet F2F on Mondays, rather content will be posted online the prior Friday by 5 pm. In addition to Wednesday sessions, other face-to-face computer lab time will be required. Graduate students are further required to meet with the instructor and/or TAs at additional scheduled times throughout the semester.

**Course Prerequisites:** Undergraduates-advanced standing, Graduate Students-none (a background in science, engineering or math is essential). Students should have mastered advanced topics in algebra.

**Course Learning Objectives:** At the end of this course, students should be able to:

1. Describe common, regulated, and emerging environmental contaminants and specific characteristics of each.
2. List the various health effects/toxic endpoints associated with hazard exposures in healthy and sensitive populations.
3. Identify primary and multiple exposure/transmission routes of environmental hazards.
4. Understand the steps involved in, and be able to perform, a qualitative and quantitative risk assessment.
5. Describe various approaches to risk analysis.
6. Differentiate the pros and cons of epidemiological vs. risk assessment studies.
7. Critique current research relative to methodological and statistical limitations and other assumptions or unknowns.
8. Perform simulation modeling exercises in Excel or other software program.
9. Integrate computer modeling tools into public health risk assessments.
10. Evaluate the use of risk assessment for regulatory development or other mitigations.
11. Graduate students only: Complete a formal risk assessment and present the results to the class.

**MPH Competencies Covered:**

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

<b>COMMUNICATION SKILLS:</b>
Communicates effectively both in writing and orally (unless a handicap precludes one of those forms of communication)
Interpreting and presenting accurately and effectively demographic, statistical, and scientific information for professional and lay audiences adapting and translating public health concepts to individuals and communities
Leading and participating in groups to address specific issues, including ability to work in teams, span organizational boundaries, and cross systems

Using all types of media to communicate important public health information
Demonstrating cultural competency in all of the above and community development

<b>POLICY DEVELOPMENT/PROGRAM PLANNING SKILLS:</b>
Assess and interpret information to develop relevant policy
Identifying public health laws, regulations, and policies related to specific programs

<b>BASIC PUBLIC HEALTH SCIENCE SKILLS:</b>
Defining, assessing, and understanding the health status of population, determinants of health and illness, factors contributing to health promotion and disease prevention, and factors influencing the use of health services
Understanding research methods in all basic public health sciences
Applying the basic public health sciences including behavioral and social sciences, biostatistics, epidemiology, environmental public health, and prevention of chronic and infectious diseases and injuries
Understanding of the historical development and structure of state, local, and federal public health agencies

<b>CULTURAL SKILLS:</b>
Interacting competently, respectfully, and professionally with persons from diverse backgrounds
Developing and adapting approaches to public health problems that take into account cultural differences
Determining health related consequences of social structure

<b>FINANCIAL PLANNING AND MANAGEMENT SKILLS:</b>
Managing programs within budgetary constraints
Developing strategies for determining priorities
Conducts cost-effectiveness, cost benefit, and cost utility analyses

**Course Notes:** You are expected to take your own notes in class. Students are responsible for collecting the material in class and for downloading information from the D2L website. If you are absent, you are expected to obtain notes and other information from a fellow classmate or from recorded lectures.

**Recommended Texts/Readings:** No required text. Instructor will assign weekly readings from the literature. Students are required to purchase a subscription to TopHat, real-time electronic class engagement software.

**Course Requirements:** You are expected to attend class, respond to questions in class, participate in class/online discussions and real-time assessments throughout the semester, submit homework assignments on time, be prepared to discuss case studies or work through calculations in class, take exams on the specified dates, and participate in additional online surveys. The best way to prepare for Face-to-Face sessions is to complete the readings, watch posted lectures or videos and begin the homework assignment before class. Several homework assignments will require the use of a PC computer to run downloaded software add-ins to Excel. **These add-ins do not work on Mac computers.** Students will be responsible for arranging access to a PC computer for several weeks during this course. PC computers are available in UA/Public libraries, in Drachman Hall's 3<sup>rd</sup> floor computer lab, and other sites locally.

**Top Hat:** We will be using the Top Hat ([www.tophat.com](http://www.tophat.com)) classroom response system in class. You will be able to submit answers to in-class questions using Apple or Android smartphones and tablets, laptops, or through text message.

You can visit the Top Hat Overview (<https://success.tophat.com/s/article/Student-Top-Hat-Overview-and-Getting-Started-Guide>) within the Top Hat Success Center which outlines how you will register for a Top Hat account, as well as providing a brief overview to get you up and running on the system.

An email invitation will be sent to you by email, but if don't receive this email, you can register by simply visiting our course website:

URL: <https://app.tophat.com/e/616997>; Join Code: 616997

Top Hat will require a paid subscription, and a full breakdown of all subscription options available can be found here: [www.tophat.com/pricing](http://www.tophat.com/pricing). Currently prices are \$24 for the semester; \$36 annually; \$72 for your lifetime as a student.

Should you require assistance with Top Hat at any time, due to the fact that they require specific user information to troubleshoot these issues, please contact their Support Team directly by way of email ([support@tophat.com](mailto:support@tophat.com)), the in app support button, or by calling 1-888-663-5491.

**Grading/Student Evaluation:** The grading system for this course is based on the following items:

Homework assignments (13/14)	260 pts
Quizzes and participation exercises	100 pts
Exam 1	100 pts
Exam 2	100 pts
<u>Final Exam (optional)</u>	<u>(100 pts)</u>
Total	560 (660) pts
Grad student final project/presentation	100 pts
Course maximum total	660 pts (undergraduate); 760 pts (graduate)

A total of 14 homework assignments are scheduled for the semester. You may drop the single lowest homework grade (counting 13/14). It is recommended that you attempt to complete all homework assignments as they are essential preparation for exams.

The final is optional. If you opt to take the final, the grade will be averaged with the total points earned over the semester, including all three exams (i.e., the final is not a substitution for any other exam.)

Final grades will be based on the following system:

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

**Homework assignments** are due by 5 pm on Fridays unless otherwise instructed. Regularly check D2L content and new or events schedule for detailed due dates. Late homework assignments will be deducted 10% for every day late, including weekends.

**Missing assignments** or assignments more than 10 days late will be assigned a zero. In the event of academic misconduct, the consequence for the first offense will be a zero for the assignment. A second offense will result in a failing grade for the course. 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 Extracurricular Activities:** PC computer use (see above under “Course Requirements”).

**Extra Credit:** There will be no extra credit assignments. Do not ask.

**Examinations:** Students will be expected to demonstrate that they have met the course objectives through homework assignments, examinations, real time evaluations (i.e., in class quizzes) and active discussions. In class and final exams will consist of multiple choice, short answer and essay questions. Some exams may include self-evaluations or take-home questions. It is your responsibility to clear your calendar and take the exam at the scheduled time and place. Except for emergency situations (e.g., medical, supported by appropriate documentation), make-up exams will not be given and zero credit will be awarded. There are no make-up opportunities for weekly quizzes and participation points. You will lose participation points if you fail to show up for class and for graduate student presentations toward the end of the semester.

**FINAL EXAM (optional): Tuesday, December 12, 2017, 10:30 am – 12:30 pm, Drachman Hall A114**

**Class Attendance/Participation:** Attendance is required each Wednesday for the face-to-face sessions. Participation points will be awarded based on participation in class discussions and quizzes. The best way to prepare for the in-class evaluations/participation is to watch assigned videos, read and critique assigned literature, come to class prepared to discuss the assigned reading, actively engage in class, and attend graduate student presentations. All students are required to attend graduate student presentations near the end of the semester in order to earn participation points. Other activities throughout the semester may be offered for participation points as well.

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>

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>.

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

**Graduate Student Requirements:** This course is a mixed undergraduate/graduate student course. Graduate students are expected to exercise a higher level of critical thinking compared to undergraduate students by moving beyond memorization, understanding, and application and further into analysis, evaluation and creativity 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 and complete a project assignment that will be presented to the entire class. Graduate students are further expected to independently seek out new thought concepts related to risk assessment and bring ideas/discussion to class via an in depth investigation of the literature beyond concepts introduced in class.

**Communications:** You are responsible for reading emails sent to your UA account from your instructor(s) and the announcements or D2L content 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>

Participation in online discussion forums is encouraged for peer mentoring and learning. The best way to reach the instructor or TAs are to visit F2F during office hours by appointment. The TA will not be available via CATMail chat forums.

**Important: check D2L regularly for a current communication of course progression.**

**Disability Accommodation:** It is the University's goal that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please let me know immediately, so that we can discuss options. You are also welcome to contact the Disability Resources (520-621-3268) to establish reasonable accommodations (as it is very important that you be registered with the DRC). For additional information on Disability Resources and reasonable accommodations, please visit <http://drc.arizona.edu/students>

**Academic Integrity:** Dr. Reynolds has a zero tolerance policy for cheating. 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>

Students are required to write all answers to assignments and exams independently. Cases of cheating, or of helping others to cheat, will be penalized to the maximum extent allowed at the University. If you are uncertain about the difference between collaboration and copying, come see me. You are encouraged to discuss assignments but your answer must be written individually and represent your own understanding. Posting answers to, or soliciting answers from, online course help sites is considered cheating.

Consequences for any type of academic misconduct may result in a grade of zero for assignment, or a failing grade for the course.

Pay special attention to the sections on plagiarism.

**Plagiarism:** What counts as plagiarism?

- Copying answers from another student or “recycling” work you have previously utilized and submitting as a new piece of work.
- 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.

**Classroom Behavior:** (Statement of expected behavior and respectful exchange of ideas:

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>

You may use your computer in class for accessing content related to this course only. Other uses of the computer during class are distracting to fellow students and lecturers and will not be permitted. Likewise, cell

phones should be set to silent or vibrate in order to not disrupt the class and disturb your fellow students and professor. Texting is not allowed during class.

**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>

**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:**

Date		Class Location		General Topic
August	21	M	Online	Review syllabus/Sign up for Panopto video access and TopHat
	23	W	A114	Course Intro/Syllabus Review/Risk Paradigm
	28	M	Online*	Risk Assessment
September	30	W	A114	
	4	M	Labor Day-Online	Dose Response/Toxicology
	6	W	A114	
	11	M	Online	Toxicology/Data Analysis/Models
	13	W	A114	
	18	M	Online	Microbial Risk Assessment
	20	W	A114	<b>Grad student topic presentation</b>
	25	M	Online	Microbial Hazard ID
	27	W	A114	
	October	2	M	Online
	4	W	A114	<b>Exam 1</b>
	9	M	Online	Chemical Hazard ID
	11	W	A114	
	16	M	Online	Exposure Assessment- Chemicals
	18	W	A114	
	23	M	Online	Exposure Assessment- Activity
	25	W	A114	
	30	M	Online	Risk characterization/Monte Carlo Simulations
November	1	W	A114	
	6	M	Online	Modeling tools/software
	8	W	A114	
	13	M	Online	Applied Models
	15	W	A114	<b>Graduate Student Presentations</b>
	20	M	A114	Risk Management/Risk Perception/Regulatory Controls
	22	W	A114	<b>Graduate Student Presentations</b>

	27	M	Online	Risk communication/ Cost-benefit analysis/Course Review
	29	W	A114	
December	4	M	Online	
	6	W	A114	<b>Exam 2</b>
December	12	T	A114	<b>Final Exam (optional) 10:30 am- 12:30 pm</b>

\*Assignments posted online by 5 pm the previous Friday, Mondays are self-paced sessions