ENVIRONMENTAL & OCCUPATIONAL HEALTH SCIENCES
UNIVERSITY of WASHINGTON | SCHOOL OF PUBLIC HEALTH

ENV H 502: Assessing and Managing Risks from Human Exposure to Environmental Contaminants (4 credits)
Autumn 2022

Instructors:

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Department of Environmental & Occupational Health Sciences

Class: **M, W 1:30pm-3:20pm, Health Sciences Education Building (HSEB) 215**
****There is no final exam held during finals week****

The University of Washington acknowledges that the land we gather on to learn, teach, and grow is the native land of the Coast Salish people, the land which touches the shared waters of all tribes and bands within the Suquamish, Tulalip, and Muckleshoot nations.

Please note that all classes will be held in-person. Much of class will include group discussion and applied problems, making the in-class learning environment superior to trying to rely on recordings. Attempts will be made to record class, but recordings will only be distributed to students who had a legitimate reason for missing class, and there is no guarantee that content will be available (if I forget to record or the recording fails). If in-person class must be cancelled for any reason, content will be recorded and put online, and I will communicate with you all openly.

Office Hours:

Textbook: You will NOT need to buy any textbook for this course. All readings will be provided as PDFs or links to webpages on the Canvas page.

Overview

Exposure science provides the data needed to inform risk assessments and apply regulatory standards to a wide range of chemical, biological, psychosocial, and physical hazards. Exposure assessment tools have wide application in epidemiological studies and in evaluating health interventions. This course introduces techniques such as hazard identification, dose response estimation, sampling for chemical and biological hazards, the use of surveys in exposure assessment, exposure biomarkers and more as applied in both occupational and community environments.

Learning Objectives

At the end of this course, students will be able to:

1. Describe the major exposure pathways for occupational and environmental disease agents.
2. Apply basic box models to assess the fate and transport of environmental contaminants.

3. Contrast the relationship between exposure and dose for the dermal, oral, and respiratory routes of exposure,
4. Identify the public health agencies responsible for foundational environmental health regulations in the US and describe how they utilize exposure data for regulations and risk assessment.
5. Distinguish between exposure strategies used for epidemiology, risk assessment, and public health regulations.
6. Critique the strengths and limitations of exposure data collected through surveys, personal monitoring, area monitoring, and qualitative methods.
7. Apply the EPA Exposure Factors Handbook to construct plausible exposure scenarios
8. Summarize individual and group exposures with appropriate statistical descriptors and methods
9. Apply the major components of the environmental and occupational risk assessment framework (problem formulation, hazard identification, dose-response assessment, exposure assessment, risk characterization, risk communication, risk management, evaluation, stakeholder engagement, and research) to address environmental public health problems experienced in the community or work environment
10. Use epidemiological and statistical techniques to describe and analyze environmental and occupational health data.

Accreditation Requirements & Competencies Met by This Course

Council on Education for Public Health (CEPH) competencies met by this course:

- Explain the role of quantitative and qualitative methods and sciences in describing and assessing a population's health (D17.3)
- Discuss the science of primary, secondary and tertiary prevention in population health, including health promotion, screening, etc. (D17.5)
- Explain effects of environmental factors on a population's health (D17.7)
- Explain biological and genetic factors that affect a population's health (D17.8)
- Explain behavioral and psychological factors that affect a population's health (D17.9)
- Explain the social, political and economic determinants of health and how they contribute to population health and health inequities (D17.10)
- Use epidemiological and statistical techniques to describe and analyze environmental and occupational health data (MS-EHS department-level competency)

Courses in the Time of COVID

I understand that higher education has changed since COVID-19, and the expectations of students and instructors has changed. I also recognize that you (and I) may encounter unexpected challenges during this quarter. That includes challenges related to health and illness, technology, caregiving responsibilities, work responsibilities, and more.

My goal this quarter is to support you in doing the best work you can in light of the challenges you face. I encourage you to remember that your health and well-being are far more important than the work you do in this class or any class, and I encourage you to take the time you need to care for yourself and your loved ones.

If you are finding it difficult to balance your health and well-being with your work in this class, please let me know. It is ok to ask for help and to acknowledge when you are struggling, and I am happy to help connect you with resources and services through campus and also make accommodations to our course plan as needed. I am accessible by email, and I will do my best to respond to messages within 24 hrs.

I also ask that you be patient with me if the challenges of this quarter force me to make last-minute changes to the course plan. I will do my best to communicate any changes clearly, and make them with respect for the inconvenience, frustration, and confusion that change may cause.

Basic Needs

Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a

safe and stable place to live, and believes this may affect their performance in the course, is urged to contact Juanita Ricks, Director for Student and Academic Services, jmricks@uw.edu, 206-616-3198.

Furthermore, please notify Dr. Baker about your concerns if you are comfortable in doing so. This will enable her to provide any resources that she may have.

Course Format

All content will be delivered in person in live session. I will attempt to record sessions for those who have legitimate reasons for missing class, but there is no guarantee that there will be a recording for every session. **You are encouraged to attend in person for the best learning experience.**

Assessments

Student mastery of material will be assessed a variety of ways over the course of the quarter. The point allocations for this course are below. Please keep in mind that assignments and their point allocation are subject to change at instructor discretion throughout the quarter. There is no final exam during finals week in this course, but there is a final activity.

Group presentation--10%

HW 1--15%

HW 2—15%

Midterm—20%

Risk Communication Activity—10%

Final Activity (Exposure Assessment Plan)—25%

Class Activities/Other/Discretionary points—5%

Readings

Any required readings for this course will be provided as a PDF on the Canvas webpage, or as a link to a publicly-accessible webpage.

Late Assignment Policy

I have set target completion dates for all quizzes/exercises/homework that are at least one week after it has been posted on Canvas. In order to keep up with the course, it is important that you try to meet these deadlines. However, if you need an extension for any reason, please contact the instructor to discuss your options.

Access and Accommodations:

Your experience in this class is important to me. It is the policy and practice of the University of Washington to create inclusive and accessible learning environments consistent with federal and state law. If you have already established accommodations with Disability Resources for Students (DRS), please activate your accommodations via myDRS so we can discuss how they will be implemented in this course.

If you have not yet established services through DRS, but have a temporary health condition or permanent disability that requires accommodations (conditions include but not limited to; mental health, attention-related, learning, vision, hearing, physical or health impacts), contact DRS directly to set up an Access Plan. DRS facilitates the interactive process that establishes reasonable accommodations. Contact DRS at disability.uw.edu.

Multi-cultural Inclusion Commitment

The UW School of Public Health seeks to ensure all students are fully included in each course. We strive to overcome systemic racism by creating an environment that reflects community and mutual caring, while we ally with others in combating all forms of social oppression. This is a work in progress, as transformation is rarely a fully-completed project. In this course, we will look for opportunities to improve our performance as we seek to break down institutional racism. This can include course readings, class interactions, faculty performance, and/or the institutional environment. We encourage students to talk to your faculty member, the program director, and/or submit your comments in the course evaluation form.

Academic Integrity

Students at the University of Washington (UW) are expected to maintain the highest standards of academic conduct, professional honesty, and personal integrity.

The UW School of Public Health (SPH) is committed to upholding standards of academic integrity consistent with the academic and professional communities of which it is a part. Plagiarism, cheating, and other misconduct are serious violations of the University of Washington Student Conduct Code (WAC 478-120). We expect you to know and follow the university's policies on cheating and plagiarism, and the SPH Academic Integrity Policy. Any suspected cases of academic misconduct will be handled according to University of Washington regulations. For more information, see the University of Washington Community Standards and Student Conduct website.

Winter Respiratory Illness—Protocols and Safety

Winter quarter is a time of increased risk of acquiring respiratory illnesses including COVID, RSV, cold, and flu.

If you feel ill or exhibit respiratory or other symptoms, you should **not** come to class. Seek medical attention if necessary and notify your instructor(s) as soon as possible by email.

Please check your email daily BEFORE coming to class. If we need to conduct class remotely because the instructor or a guest speaker is unable to attend in person, we will send all registered students an email with a Zoom link for remote instruction or a plan for making up the class.

Additional recommendations include:

- **Get boosted with the updated COVID-19 vaccines.** These vaccines are available at clinics and pharmacies, as well as through UW Medicine and local health agencies.
- **Get your annual flu shot.**
- **Wear a high-quality mask in indoor public spaces and while traveling. Masks are strongly recommended the first two weeks of winter quarter.** High-quality masks help protect against a range of respiratory viruses, and are available for free in locations on each UW campus.
- **Take a coronavirus test if you have symptoms or have been exposed.** Rapid antigen tests are widely available for free in at on campus locations linked here. The Husky Coronavirus Testing voluntary research study is also available for UW students.
- **Activate WA Notify on your phone** to receive exposure notifications and so that you can anonymously let others know of their exposure if you test positive.

Religious Accommodations

Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The UW's policy, including more information about how to request an accommodation, is available at Religious Accommodations Policy (https://registrar.washington.edu/staffandfaculty/religious-accommodatio…). Accommodations must be requested within the first two weeks of this course using the Religious Accommodations Request form

Course Schedule

Date	Session Topic	In class activities	Out of Class Assignments

Date	Session Topic	In class activities	Out of Class Assignments
1: Wed 1/4/23	Course intro/what is exposure assessment?		
2: Mon 1/9/23	Exposure assessment informs public health (Exposure Regulations)	Group practice problems	HW 1 released
3: Wed 1/11/23	Exposure data sources/exposure factors handbook	Group practice problems	
Mon 1/16/23	**No Class: MLK Jr. Day**		
4: Wed 1/18/23	Chemical Exposures (Air sampling)	Group practice problems	
5: Mon 1/23/23	Chemical Exposures (Data analysis and Interpretation)	Red Group Presentation	HW 1 due
6: Wed 1/25/23	Chemical Exposures (Box and Plume models)	Orange Group Presentation	HW 2 released
7: Mon 1/30/23	Exposure Assessment Considerations in Epidemiology	Yellow Group Presentation	
8: Wed 2/1/23	Dermal/Ingestion Exposures	Green Group Presentation	
9: Mon 2/6/23	Qualitative Methods (Errett)		
10: Wed 2/8/23	The use of surveys/questionnaires for exposure assessment	Blue Group Presentation	HW 2 due
11: Mon 2/13/23	Biological Agents 1 (Meschke)	Indigo Group Presentation	Midterm released
12: Wed 2/15/23	Biological Agents 2 (Meschke)		
Mon 2/20/23	**No Class: President's Day**		
13: Wed 2/22/23	Psychosocial exposures	Violet Group Presentation	
14: Mon 2/27/23	[Optional group work session]		Midterm due
15: Wed 3/1/23	Biomonitoring for exposure assessment (Simpson)		
16: Mon 3/6/23	Field Work Panel	Panel questions Group work time	
17: Wed 3/8/23	Risk Communication for exposure assessment	In-class risk communication activity	
Wed 3/15/23	**Finals Week**		Exposure Assessment Plan Due

Grades for this course

Grades for this course will be assigned based on the table below. Rounding will be done at the instructor's discretion.

Lower Percent Cut-Off	Assigned GPA
≥98	4.0
≥96.4	3.9
≥94.9	3.8

≥93.3	3.7
≥91.7	3.6
≥90.2	3.5
≥88.6	3.4
≥87	3.3
≥85.5	3.2
≥83.9	3.1
≥82.3	3.0
≥80.8	2.9
≥79.2	2.8
≥77.7	2.7
≥76.1	2.6
≥74.5	2.5
≥73	2.4
≥71.4	2.3
≥69.8	2.2
≥68.3	2.1
≥66.7	2.0
≥65.1	1.9
≥63.6	1.8
≥62	1.7
<62	0.0