

Course Syllabus

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ENV H 551 A: Human Exposure to Environmental Contaminants (Winter 2019)

4 credits, graded, SLN 14428

Instructor: Michael G Yost, Professor & Chair, DEOHS

Contact Info: Health Sciences Building F-463, (206) 685-7243 airion@uw.edu (<mailto:airion@uw.edu>)

Office Hours: by appointment (please contact ehchair@uw.edu (<mailto:ehchair@uw.edu>) to set up a meeting time)

Time: Tuesday & Thursday at 8:30am – 10:20

Location: HSB I-142

Required Readings

- Exposure Assessment in Environmental Epidemiology. 2015. 2nd Edition. Mark J. Nieuwenhuijsen (Editor). Oxford University Press, USA.
- Additional links to weekly reading materials will be posted on the course website

Course Description

Exposure assessment science plays a critical role in risk assessment, epidemiology, and environmental public health interventions. This course introduces techniques such as pathway analysis, fate and transport modeling, statistical exposure estimation, exposure biomarkers, and energetics used to characterize chemical, biological and physical hazards in both occupational and community environments. The course is divided into four modules: exposure pathway analysis, exposure data analysis, biological markers of exposure, and the energetics of physical agents and injuries.

Exams, Assignments and Grading

There will be two homework assignments, a midterm exam with a short written report (~3 pages) and one longer written report (~5 pages) that serves as the final exam. Course grading will be as follows:

Homework - 30%

Posting/reflection assignments - 10%

Midterm exam - 30%

Final - 30%

Learning Objectives

1. Describe the major exposure pathways for occupational and environmental disease agents
2. Apply basic box and plume 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 agencies responsible for basic environmental health regulations in the US use exposure data
5. Distinguish exposure strategies used for epidemiology, risk assessment, and environmental health regulations
6. Critique the strengths and limitations of exposure data collected through self-reports, micro-environmental measurement methods, and personal monitoring 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. Explain the difference between deterministic and probabilistic exposure models
10. Describe the procedures used to map exposure over time and space using GIS and GPS
11. Describe the factors in absorption, distribution, metabolism and excretion process for chemical agents
12. Describe the electromagnetic spectrum in terms of energy and types of radiation relevant to human exposures
13. Classify typical human anatomical characteristics subject to ergonomic stress and repetitive motion injury

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](http://sph.washington.edu/students/academicintegrity/) [\(http://sph.washington.edu/students/academicintegrity/\)](http://sph.washington.edu/students/academicintegrity/). 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.

Access and Accommodation

Your experience in this class is important to me. If you have already established accommodations with Disability Resources for Students (DRS), please communicate your approved accommodations to me at your earliest convenience so we can discuss your needs 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), you are welcome to contact DRS at 206-543-8924 or [uwdrs@uw.edu \(mailto:uwdrs@uw.edu\)](mailto:uwdrs@uw.edu) or [disability.uw.edu \(http://depts.washington.edu/uwdrs/\)](http://depts.washington.edu/uwdrs/). DRS offers resources and coordinates reasonable accommodations for students with disabilities and/or temporary health conditions. Reasonable accommodations are established through an interactive process


between you, your instructor(s) and DRS. It is the policy and practice of the University of Washington to create inclusive and accessible learning environments consistent with federal and state law.

Classroom Climate

The UW School of Public Health seeks to ensure all students are fully included in each course. We strive to create an environment that reflects community and mutual caring. We encourage students with concerns about classroom climate to talk to your instructor, your advisor, a member of the departmental or SPH Diversity Committee and/or the program director. [DCinfo@uw.edu \(mailto:DCinfo@uw.edu\)](mailto:DCinfo@uw.edu) is a resource for students with classroom climate concerns.

Course Summary:

Date	Details	
Tue Jan 8, 2019	 Lesson 1: Preparation for Class & Reflection Assignment (https://canvas.uw.edu/courses/1261525/assignments/4529573)	due by 5pm
Wed Jan 9, 2019	 Current Events Discussion Questions 1/10/19	to do: 4:59pm
Thu Jan 10, 2019	 Lesson 2: Preparation for Class & Reflection Assignment (Discussion group formation) (https://canvas.uw.edu/courses/1261525/assignments/4529579)	due by 5pm
Tue Jan 15, 2019	 Lesson 3: Preparation for Class & Reflection Assignment (https://canvas.uw.edu/courses/1261525/assignments/4529581)	due by 5pm
Thu Jan 17, 2019	 Lesson 4: Preparation for Class & Reflection Assignment (Discussion - Purple) (https://canvas.uw.edu/courses/1261525/assignments/4529583)	due by 5pm
Tue Jan 22, 2019	 Lesson 5: Preparation for Class & Reflection Assignment (https://canvas.uw.edu/courses/1261525/assignments/4529585)	due by 5pm
Thu Jan 24, 2019	 Lesson 6: Preparation for Class & Reflection Assignment (Discussion - Blue) (https://canvas.uw.edu/courses/1261525/assignments/4529575)	due by 5pm
Tue Jan 29, 2019	 Lesson 7: Preparation for Class & Reflection Assignment (https://canvas.uw.edu/courses/1261525/assignments/4529587)	due by 5pm
Thu Jan 31, 2019	 Homework Assignment 1 (https://canvas.uw.edu/courses/1261525/assignments/4529554)	due by 5pm
	 Lesson 8: Preparation for Class (https://canvas.uw.edu/courses/1261525/assignments/4529591)	due by 5pm

Date	Details	
Thu Feb 7, 2019	 Lessons 9 & 10: Preparation for Class & Reflection Assignment (https://canvas.uw.edu/courses/1261525/assignments/4529593)	due by 5pm
Tue Feb 12, 2019	 Lesson 11 & 12: Preparation for Class & Reflection Assignment (https://canvas.uw.edu/courses/1261525/assignments/4529559)	due by 5pm
Tue Feb 19, 2019	 Lesson 13: Preparation for Class & Reflection Assignment (https://canvas.uw.edu/courses/1261525/assignments/4529563)	due by 5pm
	 Take-Home Midterm Exam (https://canvas.uw.edu/courses/1261525/assignments/4529595)	due by 5pm
Thu Feb 21, 2019	 Lesson 14: Preparation for Class (https://canvas.uw.edu/courses/1261525/assignments/4529565)	due by 5pm
Tue Feb 26, 2019	 Lessons 15 & 16: Preparation for Class & Reflection Assignment (https://canvas.uw.edu/courses/1261525/assignments/4529592)	due by 5pm
Thu Feb 28, 2019	 Homework Assignment 2 (https://canvas.uw.edu/courses/1261525/assignments/4529555)	due by 5pm
Tue Mar 5, 2019	 Lesson 17 & 19: Preparation for Class & Reflection Assignment (https://canvas.uw.edu/courses/1261525/assignments/4529556)	due by 5pm
Thu Mar 7, 2019	 Lesson 18: Preparation for Class & Reflection Assignment (https://canvas.uw.edu/courses/1261525/assignments/4529569)	due by 5pm
	 Lesson 20: Preparation for Class (https://canvas.uw.edu/courses/1261525/assignments/4529571)	due by 5pm
Wed Mar 13, 2019	 Lesson 21: Panopto Video and Slide Set (https://canvas.uw.edu/courses/1261525/assignments/4529576)	due by 2:30pm
	 Lesson 21: Preparation for Class & Reflection Assignment (https://canvas.uw.edu/courses/1261525/assignments/4529577)	due by 3pm
Tue Mar 19, 2019	 Take-Home Final Exam (https://canvas.uw.edu/courses/1261525/assignments/4529594)	due by 12pm
	 Additional Materials for Lesson 17 (https://canvas.uw.edu/courses/1261525/assignments/4529550)	
	 Additional Materials for Lesson 19 (https://canvas.uw.edu/courses/1261525/assignments/4529551)	
	 Additional Materials for Lesson 7 and 8 (https://canvas.uw.edu/courses/1261525/assignments/4529552)	
		

[Additional Materials from Lesson 16](#)

<https://canvas.uw.edu/courses/1261525/assignments/4529553>

**[Lesson 10: Panopto Video and Slide Set](#)**

<https://canvas.uw.edu/courses/1261525/assignments/4529589>

**[Lesson 11: Panopto Video and Slide Set](#)**

<https://canvas.uw.edu/courses/1261525/assignments/4529560>

**[Lesson 12: Panopto Video and Slide Set \(Discussion - Green\)](#)**

<https://canvas.uw.edu/courses/1261525/assignments/4529561>

**[Lesson 13: Panopto Video and Slide Set](#)**

<https://canvas.uw.edu/courses/1261525/assignments/4529562>

**[Lesson 14: Panopto Video and Slide Set](#)**

<https://canvas.uw.edu/courses/1261525/assignments/4529564>

**[Lesson 15: Panopto Video and Slide Set](#)**

<https://canvas.uw.edu/courses/1261525/assignments/4529566>

**[Lesson 16: Panopto Video and Slide Set](#)**

<https://canvas.uw.edu/courses/1261525/assignments/4529567>

**[Lesson 17: Panopto Video and Slide Set](#)**

<https://canvas.uw.edu/courses/1261525/assignments/4529557>

**[Lesson 18: Panopto Video and Slide Set](#)**

<https://canvas.uw.edu/courses/1261525/assignments/4529568>

**[Lesson 19: Panopto Video and Slide Set](#)**

<https://canvas.uw.edu/courses/1261525/assignments/4529558>

**[Lesson 1: Panopto Video and Slide Set](#)**

<https://canvas.uw.edu/courses/1261525/assignments/4529572>

**[Lesson 20: Panopto Video and Slide Set](#)**

<https://canvas.uw.edu/courses/1261525/assignments/4529570>

**[Lesson 2: Panopto Video and Slide Set](#)**

<https://canvas.uw.edu/courses/1261525/assignments/4529578>

**[Lesson 3: Panopto Video and Slide Set](#)**

<https://canvas.uw.edu/courses/1261525/assignments/4529580>

**[Lesson 4: Panopto Video and Slide Set](#)**

<https://canvas.uw.edu/courses/1261525/assignments/4529582>

**[Lesson 5: Panopto Video and Slide Set](#)**

<https://canvas.uw.edu/courses/1261525/assignments/4529584>

**[Lesson 6: Panopto Video and Slide Set](#)**

<https://canvas.uw.edu/courses/1261525/assignments/4529574>

**[Lesson 7: Panopto Video and Slide Set](#)**

<https://canvas.uw.edu/courses/1261525/assignments/4529586>

**[Lesson 8: Panopto Video and Slide Set](#)**

Date

Details

<https://canvas.uw.edu/courses/1261525/assignments/4529590>



[Lesson 9: Panopto Video and Slide Set](#)

<https://canvas.uw.edu/courses/1261525/assignments/4529588>
