

# Course Syllabus

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## ENV H 551 A: Human Exposure to Environmental Contaminants (Autumn 2017)

4 credits, graded, SLN 14826

Instructor: Michael G Yost, Professor & Chair, DEOHS

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

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

Time: Monday & Wednesday at 3:00p – 4:50p

Location: Anderson 010

### 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 a midterm exam, two homework assignments, one short written report (~3 pages) analyzing key aspects of the readings, and one longer written report (~5 pages) that serves as the final exam, which reviews exposure assessment techniques for a specific agent/exposure. Course grading will be as follows:

Homework - 40%

Posting/reflection assignments - 10%

Midterm exam - 20%

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
0. 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
2. Describe the electromagnetic spectrum in terms of energy and types of radiation relevant to human exposures
3. 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/>). 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	
Wed Sep 27, 2017	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811284">Lesson 1: Panopto Video and Slide Set</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811284">https://canvas.uw.edu/courses/1117285/assignments/3811284</a>	due by 2:30pm
	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811286">Lesson 1: Preparation for Class &amp; Reflection Assignment</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811286">https://canvas.uw.edu/courses/1117285/assignments/3811286</a>	due by 3pm
Mon Oct 2, 2017	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811291">Lesson 2: Panopto Video and Slide Set</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811291">https://canvas.uw.edu/courses/1117285/assignments/3811291</a>	due by 2:30pm
	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811292">Lesson 2: Preparation for Class &amp; Reflection Assignment</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811292">https://canvas.uw.edu/courses/1117285/assignments/3811292</a>	due by 3pm
Wed Oct 4, 2017	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811293">Lesson 3: Panopto Video and Slide Set</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811293">https://canvas.uw.edu/courses/1117285/assignments/3811293</a>	due by 2:30pm
	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811294">Lesson 3: Preparation for Class &amp; Reflection Assignment</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811294">https://canvas.uw.edu/courses/1117285/assignments/3811294</a>	due by 3pm
Mon Oct 9, 2017	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811295">Lesson 4: Panopto Video and Slide Set</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811295">https://canvas.uw.edu/courses/1117285/assignments/3811295</a>	due by 2:30pm
	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811296">Lesson 4: Preparation for Class &amp; Reflection Assignment</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811296">https://canvas.uw.edu/courses/1117285/assignments/3811296</a>	due by 3pm
Wed Oct 11, 2017	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811297">Lesson 5: Panopto Video and Slide Set</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811297">https://canvas.uw.edu/courses/1117285/assignments/3811297</a>	due by 2:30pm
	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811298">Lesson 5: Preparation for Class &amp; Reflection Assignment</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811298">https://canvas.uw.edu/courses/1117285/assignments/3811298</a>	due by 3pm

Mon Oct 16, 2017	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811299">Lesson 6: Panopto Video and Slide Set</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811299">https://canvas.uw.edu/courses/1117285/assignments/3811299</a>	due by 2:30pm
	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811302">Lesson 6: Preparation for Class &amp; Reflection Assignment</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811302">https://canvas.uw.edu/courses/1117285/assignments/3811302</a>	due by 3pm
Wed Oct 18, 2017	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811300">Lesson 7: Panopto Video and Slide Set</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811300">https://canvas.uw.edu/courses/1117285/assignments/3811300</a>	due by 2:30pm
	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811306">Lessons 7 &amp; 8: Preparation for Class &amp; Reflection Assignment</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811306">https://canvas.uw.edu/courses/1117285/assignments/3811306</a>	due by 3pm
Fri Oct 20, 2017	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811266">Homework Assignment 1</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811266">https://canvas.uw.edu/courses/1117285/assignments/3811266</a>	due by 3pm
Mon Oct 23, 2017	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811301">Lesson 8: Panopto Video and Slide Set</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811301">https://canvas.uw.edu/courses/1117285/assignments/3811301</a>	due by 2:30pm
Wed Oct 25, 2017	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811303">Lesson 9: Panopto Video and Slide Set</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811303">https://canvas.uw.edu/courses/1117285/assignments/3811303</a>	due by 2:30pm
	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811265">Additional Materials for Lesson 9</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811265">https://canvas.uw.edu/courses/1117285/assignments/3811265</a>	due by 3pm
	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811304">Lesson 9: Preparation for Class &amp; Reflection Assignment</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811304">https://canvas.uw.edu/courses/1117285/assignments/3811304</a>	due by 3pm
Mon Oct 30, 2017	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811281">Lesson 10: Panopto Video and Slide Set</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811281">https://canvas.uw.edu/courses/1117285/assignments/3811281</a>	due by 2:30pm
	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811262">Additional Materials for Lesson 10</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811262">https://canvas.uw.edu/courses/1117285/assignments/3811262</a>	due by 3pm
	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811282">Lesson 10 &amp; 11: Preparation for Class &amp; Reflection Assignment</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811282">https://canvas.uw.edu/courses/1117285/assignments/3811282</a>	due by 3pm
Wed Nov 1, 2017	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811283">Lesson 11: Panopto Video and Slide Set</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811283">https://canvas.uw.edu/courses/1117285/assignments/3811283</a>	due by 2:30pm
	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811263">Additional Materials for Lesson 11</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811263">https://canvas.uw.edu/courses/1117285/assignments/3811263</a>	due by 3pm
Mon Nov 6, 2017	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811268">Lesson 12: Panopto Video and Slide Set</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811268">https://canvas.uw.edu/courses/1117285/assignments/3811268</a>	due by 2:30pm
	 <a href="https://canvas.uw.edu/courses/1117285/assignments/3811269">Lesson 12 &amp; 13: Preparation for Class &amp; Reflection Assignment</a> <a href="https://canvas.uw.edu/courses/1117285/assignments/3811269">https://canvas.uw.edu/courses/1117285/assignments/3811269</a>	due by 3pm
Wed Nov 8, 2017	 <a href="#">Lesson 13: Panopto Video and Slide Set</a>	

<https://canvas.uw.edu/courses/1117285/assignments/3811270>

due by 2:30pm

Sun Nov 12, 2017

 [Take-Home Midterm Exam](#)

<https://canvas.uw.edu/courses/1117285/assignments/3811308>

due by 11:59pm

Mon Nov 13, 2017

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

<https://canvas.uw.edu/courses/1117285/assignments/3811271>

due by 2:30pm

 [Lesson 14: Preparation for Class & Reflection Assignment](#)

<https://canvas.uw.edu/courses/1117285/assignments/3811272>

due by 3pm

Wed Nov 15, 2017

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

<https://canvas.uw.edu/courses/1117285/assignments/3811273>

due by 2:30pm

 [Lesson 15: Preparation for Class & Reflection Assignment](#)

<https://canvas.uw.edu/courses/1117285/assignments/3811274>

due by 3pm

Mon Nov 20, 2017

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

<https://canvas.uw.edu/courses/1117285/assignments/3811275>

due by 2:30pm

 [Lessons 16 & 17: Preparation for Class & Reflection Assignment](#)

<https://canvas.uw.edu/courses/1117285/assignments/3811305>

due by 3pm

Wed Nov 22, 2017

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

<https://canvas.uw.edu/courses/1117285/assignments/3811276>

due by 2:30pm

 [Additional Materials from Lesson 17](#)

<https://canvas.uw.edu/courses/1117285/assignments/3811264>

due by 3pm

 [Homework Assignment 2](#)

<https://canvas.uw.edu/courses/1117285/assignments/3811267>

due by 3pm

Mon Nov 27, 2017

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

<https://canvas.uw.edu/courses/1117285/assignments/3811277>

due by 2:30pm

 [Lesson 18: Preparation for Class & Reflection Assignment](#)

<https://canvas.uw.edu/courses/1117285/assignments/3811278>

due by 3pm

Wed Nov 29, 2017

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

<https://canvas.uw.edu/courses/1117285/assignments/3811279>

due by 2:30pm

 [Lesson 19: Preparation for Class & Reflection Assignment](#)

<https://canvas.uw.edu/courses/1117285/assignments/3811280>

due by 3pm

Mon Dec 4, 2017

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

<https://canvas.uw.edu/courses/1117285/assignments/3811287>

due by 2:30pm


 [Lesson 20: Preparation for Class & Reflection Assignment](#)

<https://canvas.uw.edu/courses/1117285/assignments/3811288>)

due by 3pm


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Wed Dec 6, 2017

 [Lesson 21: Panopto Video and Slide Set](https://canvas.uw.edu/courses/1117285/assignments/3811289)  
(<https://canvas.uw.edu/courses/1117285/assignments/3811289>)

due by 2:30pm

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 [Lesson 21: Preparation for Class & Reflection Assignment](https://canvas.uw.edu/courses/1117285/assignments/3811290)  
(<https://canvas.uw.edu/courses/1117285/assignments/3811290>)

due by 3pm

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Fri Dec 15, 2017

 [Take-Home Final Exam](https://canvas.uw.edu/courses/1117285/assignments/3811307)  
(<https://canvas.uw.edu/courses/1117285/assignments/3811307>)

due by 12pm

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 [Rubric for Midterm](https://canvas.uw.edu/courses/1117285/assignments/3940814)  
(<https://canvas.uw.edu/courses/1117285/assignments/3940814>)

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