

ENV H 305 A Au 18: Environmental Poisons And Public Health

[Jump to Today](#)

 [Edit](#)

ENVH 305 Poisons & Health

3 Credits, Graded

Fall 2017

Days & Times: MWF, 12:30 – 1:20

Location: HSB-T473

Instructor: Prof. Terrance Kavanagh **Email:** tjkav@uw.edu (<mailto:zxia@uw.edu>) **Phone:** (206) 685-8479

Office: 4225 Roosevelt Way NE, Room 226

TA: Tyler Nicholas **Email:** nicholat@uw.edu (<mailto:nicholat@uw.edu>)

Office Hours: Friday, 2:00 – 3:00, Health Science Library

Course Overview & Format

The goal of this course is to introduce undergraduate students in all majors to the various ways in which chemical hazards impact both the environment in which they are found and the humans who interact with them. Topics covered include the history of hazardous substances in the environment, how these substances move through various ecological systems, how humans are exposed to them, what adverse human health effects they may cause, what are the key factors influencing toxicity and susceptibility, and what regulatory frameworks are in place to help minimize risk. The course is designed to facilitate student-centered, active and investigative learning. In addition to formal lectures, case-based instructional strategies are used to introduce and explore the core concepts of toxicology and related environmental health disciplines and apply these concepts to real-world situations with relevance to students' lives. Through the lens of the five case-based modules, students learn to critically evaluate media reports about environmental hazards to human health by applying core principles from toxicology and other related environmental public health disciplines.

Textbooks & Other Course Materials

There are no required textbooks for this course, but the following titles are recommended for students who want additional background reading:

Reserved & Health Sciences Library:

- Richards, I., & Bourgeois, Marie. (2013). *Principles and practice of toxicology in public health* (2nd ed.). Sudbury, Mass.: Jones & Bartlett Learning. (**hardcopy available now in Health Science Library**)
- Frumkin, H., Editor (2016). *Environmental health: from global to local* (3rd ed). San Francisco, CA: Jossey-Bass, A Wiley Brand. [Link](https://alliance-primo.hosted.exlibrisgroup.com/primo-explore/fulldisplay?docid=CP71248721020001451&context=L&vid=UW&search_scope=course_reserves&tab=cr&lang=en_US) [_1](https://alliance-primo.hosted.exlibrisgroup.com/primo-explore/fulldisplay?docid=CP71248721020001451&context=L&vid=UW&search_scope=course_reserves&tab=cr&lang=en_US)
- Klaassen, Curtis D, & Watkins, John B. (2015). *Casarett & Doull's essentials of toxicology* (3rd). New York, N.Y.: McGraw-Hill Companies. [Link](https://alliance-primo.hosted.exlibrisgroup.com/primo-explore/fulldisplay?docid=CP71242139490001451&context=L&vid=UW&search_scope=course_reserves&tab=cr&lang=en_US) [_2](https://alliance-primo.hosted.exlibrisgroup.com/primo-explore/fulldisplay?docid=CP71242139490001451&context=L&vid=UW&search_scope=course_reserves&tab=cr&lang=en_US)

Free Download:

- Gilbert, S. (2012). *A small dose of toxicology: The health effects of common chemicals*. <http://www.toxipedia.org/display/hwt/Healthy+World+Press>
(<http://www.toxipedia.org/display/hwt/Healthy+World+Press>)

Required & Additional Readings:

- [Required reading](#)
- [Additional reading](#)

Required background readings/podcasts/videos for each class session will be posted on the course website. Students will typically be asked to review 2-5 items each week, consisting of a combination of single book chapters, articles from the popular press, journal articles, short instructional videos/mini-lectures, podcasts, or video clips from news programs or documentaries. All materials will be accessed through curated assignment pages on the course website that provide a brief introduction to the topic, contextualize each item, and provide framing questions that help guide students through the material and focus on the key concepts being presented.

Student Assessment

The overall course grade will be based on:

- 25% In-class assignments (see breakdown below)
- 30% Small group presentations (for 2 modules, 15% each)
- 10% Follow-up question submissions (for 2 modules, 5% each)
- 15% Individual reflection paper (for one module)
- 20% Final exam

In-class assignments (25%): Student understanding will be assessed periodically through the following short, in-class graded assignments:

- *Question of the Day* (2 points., 5 times = 10 total points)
- *One-Minute Paper* (1 point, 5 times = 5 total points)
- *Think-Pair-Share* (2 points, 5 times = 10 total points)

All submissions (on paper) will be collected in class. In addition, the instructor will also ask volunteers for in-class discussion, or randomly drawing names if necessary.

Small group presentations (30%), follow-up question submissions (10%), and individual reflection papers (15%): This course is organized around five case study-based modules. Students will be required to **actively participate in each and every module in one of three ways**: by working in a small group to prepare an in-class presentation on a specific aspect of the topic (2 of the 5 modules); by preparing and submitting follow-up questions for the presenters (2 of the 5 modules); or by writing an individual reflection paper (1 of the 5 modules). For example, for any given module, each student will participate in one of the following three activities:

- Small group presentations (30%): 12-16 students will be divided into small groups of 3-4 students each, and each group will research an Area of Further Inquiry (AFI) related to the topic and prepare a short presentation **to be turned in as an electronic submission via Canvas at least 24 hours before presenting in-class (see follow-up question submissions)**. Grades for each small group presentation will be based on a combination of instructor/TA evaluation (60%) and peer evaluation by group members for individual contribution (40%). Everyone in the group will receive the same grade, unless feedback from the group indicates that an individual group member deserves either a lower or higher grade based on their contribution to the project. For example:
 - 15 points: 9 points (instructor/TA) + 6 points (peer evaluation)
 - Extra credit (3 points): present data/articles from peer-reviewed scientific journals
- Follow-up question submissions (10%): 12-16 students will be divided into small groups of 3-4 students each and will review a presentation on Canvas (submitted 24 hours before presenting in-class) and **submit two copies of follow-up questions: one electronic submission via Canvas before the start of class, and a second hard copy submission to the presenters at the beginning of the class**. The small groups are encouraged to collaborate on their questions to avoid redundancy.
- Individual reflection papers (15%): Remaining students will write individual reflection papers at the end of the module, summarizing what they learned about the topic, which can include relevant topics beyond those discussed in class, and how it might be relevant to their own lives, future career goals, etc.

- **Due:** electronic submission via Canvas prior the start of the next class after the conclusion of the module.
- **Format:** ≤ 3 pages, double-spaced.
- **Lateness:** deduct 1 point each day, unless for approved excused reasons [illness (doctor's note required), family emergency]

Final exam (20%): The final exam will consist of multiple-choice questions designed to evaluate student mastery of the content covered throughout the course.

Extra credit (3 points for each):

- Small group presentations: present data/articles from peer-reviewed scientific journals
- Individual reflection paper: reflect on additional information beyond those topics covered in classroom discussions, especially those from peer-reviewed scientific journals

Course Website

All materials, assignments, etc. for this course will be available via Canvas.

<https://canvas.uw.edu/courses/1220635/>

Course Outline

The following session-by-session schedule is tentative and subject to change.

Note: Each case study module includes material related the following core concepts of Environmental Health/Toxicology as they pertain to that particular substance/toxicant:

- Fate and transport
- Dose-response
- Absorption, distribution, metabolism, and excretion (ADME)
- Effects of routes, frequency, and duration of exposure
- Individual susceptibility
- Toxicity testing
- Occupational and environmental epidemiology
- Risk assessment, policy and regulatory framework

Session Date Topic Covered or Activity

INTRODUCTORY MODULE 1: *Foundational Concepts*

- | | | |
|----------|-------------|--|
| 1 | 9/26 | <ul style="list-style-type: none"> · Course introduction and overview · Chemical body burden engagement activity |
| 2 | 9/28 | <ul style="list-style-type: none"> · Chemical body burden information search and evaluation activity |
| 3 | 10/1 | <ul style="list-style-type: none"> · Intro to dose-response & ADME - part I |
| 4 | 10/3 | <ul style="list-style-type: none"> · Intro to dose-response & ADME - part II · Intro to effective group work |

MODULE 2: *Case Study—Lead*

- | | | |
|----------|--------------|--|
| 5 | 10/5 | <ul style="list-style-type: none"> · Presentation groups formed and students meet each other · Overview of case study · Interactive lecture: “Foundations of Lead” |
| 6 | 10/8 | <ul style="list-style-type: none"> · Presenting groups and questions groups brainstorm to identify Areas for Further Inquiry (AFI): What do we know? What do we need to know? How can we find it out? · Last 15 min: groups report back to the class and we decide on AFI for each presenting group. |
| 7 | 10/10 | <ul style="list-style-type: none"> · In-class group work: “Foundations of Lead”, refinement of presentations based on group questions |
| 8 | 10/12 | <ul style="list-style-type: none"> · Small group presentations - session 1 (3 presentations); questions asked |
| 9 | 10/15 | <ul style="list-style-type: none"> · Small group presentations - session 2 (3 presentations); questions asked |

MODULE 3: *Case Study—Aflatoxin*

- | | | |
|-----------|--------------|---|
| 10 | 10/17 | <ul style="list-style-type: none"> · Overview of case study · Interactive lecture: “Foundations of Aflatoxin” |
|-----------|--------------|---|

- 11 10/19 · Presenting groups and questions groups brainstorm to identify Areas for Further Inquiry (AFI): What do we know? What do we need to know? How can we find it out?
· Last 15 min: groups report back to the class and we decide on AFI for each presenting group.
- 12 10/22 · In-class group work: "Foundations of Aflatoxin", refinement of presentations based on group questions
- 13 10/24 · Small group presentations - session 1 (3 presentations); questions asked
- 14 10/26 · Small group presentations - session 2 (3 presentations); questions asked

MODULE 4: Case Study—Bisphenol A (BPA)

- 15 10/29 · Overview of case study
· Interactive lecture: "Foundations of BPA"
- 16 10/31 · Presenting groups brainstorm to identify AFI: What do we know? What do we need to know? How can we find it out?
· Last 15 min: presenting groups report back to the class and we decide on AFI for each presenting group.
- 17 11/2 · In-class group work: "Foundations of BPA", refinement of presentations based on group questions
- 18 11/5 · Small group presentations - session 1 (3 presentations); questions asked
- 19 11/7 · Small group presentations - session 2 (3 presentations); questions asked

MODULE 5: Case Study—Cadmium

- 20 11/9 · Overview of case study

- Interactive lecture: “Foundations of Cadmium”
 - Presenting groups brainstorm to identify AFI: What do we know? What do we need to know? How can we find it out?
- 21** **11/14**
- Last 15 min: presenting groups report back to the class and we decide on AFI for each presenting group.
- 22** **11/16**
- In-class group work: “Foundations of Cadmium”, refinement of presentations based on group questions
- 23** **11/19**
- Small group presentations - session 1 (3 presentations); questions asked
- 24** ; questions asked

MODULE 6: Case Study—*Marijuana and Pesticides*

- Overview of case study
 - Interactive lecture: “Foundations of Marijuana and Pesticides”
 - Presenting groups brainstorm to identify AFI: What do we know? What do we need to know? How can we find it out?
- 25** **11/26**
- Last 15 min: presenting groups report back to the class and we decide on AFI for each presenting group.
- 26** **11/28**
- In-class group work: “Foundations of Marijuana and Pesticides”, refinement of presentations based on group questions
- 27** **11/30**
- Small group presentations - session 1 (3 presentations); questions asked
- 28** **12/3**
- Small group presentations - session 2 (3 presentations); questions asked
- 29** **12/5**

Closing Reflections

- Emerging issues and final reflection. Are we doomed, or are there reasons to be optimistic?
- 30** **12/7**

Final exam: Th, 12/13, 8:30 – 10:20, HSB-T478

UW Disability Statement

















Access and Accommodations: Your experience in this class is important to us, and 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 experience barriers based on a disability or temporary health condition, please seek a meeting with Disability Resources for Students (DRS) to discuss and address them. If you have already established accommodations with DRS, please communicate your approved accommodations to your instructor at your earliest convenience so we can discuss your needs in this course.

















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. If you have not yet established services through DRS, but have a temporary health condition or permanent disability that requires accommodations (this can 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/)

















UW Academic Integrity Statement


















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.












Course Summary:

Date	Details	
Thu Oct 11, 2018	 Module 2: Presentation - Group 1 https://canvas.uw.edu/courses/1220635/assignments/4412663	due by 12:30pm
	 Module 2: Presentation - Group 2 https://canvas.uw.edu/courses/1220635/assignments/4412665	due by 12:30pm
	 Module 2: Presentation - Group 3 https://canvas.uw.edu/courses/1220635/assignments/4412664	due by 12:30pm
Fri Oct 12, 2018	 Module 2: Question - Group 1 https://canvas.uw.edu/courses/1220635/assignments/4413117	due by 11:30am
	 Module 2: Question - Group 2 https://canvas.uw.edu/courses/1220635/assignments/4413118	due by 11:30am
	 Module 2: Question - Group 3 https://canvas.uw.edu/courses/1220635/assignments/4413119	due by 11:30am
Sun Oct 14, 2018	 Module 2: Presentation - Group 4 https://canvas.uw.edu/courses/1220635/assignments/4412666	due by 12:30pm
	 Module 2: Presentation - Group 5 https://canvas.uw.edu/courses/1220635/assignments/4412667	due by 12:30pm
	 Module 2: Presentation - Group 6 https://canvas.uw.edu/courses/1220635/assignments/4412669	due by 12:30pm
Mon Oct 15, 2018	 Module 2: Question - Group 4 https://canvas.uw.edu/courses/1220635/assignments/4413120	due by 11:30am
	 Module 2: Question - Group 5 https://canvas.uw.edu/courses/1220635/assignments/4413122	due by 11:30am
	 Module 2: Question - Group 6 https://canvas.uw.edu/courses/1220635/assignments/4413121	due by 11:30am
Wed Oct 17, 2018	 Module 2: Paper https://canvas.uw.edu/courses/1220635/assignments/4463872	due by 11:59pm
Tue Oct 23, 2018	 Module 3: Presentation - Group 1 https://canvas.uw.edu/courses/1220635/assignments/4412730	due by 12:30pm
	 Module 3: Presentation - Group 2 https://canvas.uw.edu/courses/1220635/assignments/4412734	due by 12:30pm
	 Module 3: Presentation - Group 3 https://canvas.uw.edu/courses/1220635/assignments/4412731	due by 12:30pm

Date	Details	
Wed Oct 24, 2018	 Module 3: Question - Group 1 (https://canvas.uw.edu/courses/1220635/assignments/4413133)	due by 11:30am
	 Module 3: Question - Group 2 (https://canvas.uw.edu/courses/1220635/assignments/4413134)	due by 11:30am
	 Module 3: Question - Group 3 (https://canvas.uw.edu/courses/1220635/assignments/4413135)	due by 11:30am
Thu Oct 25, 2018	 Module 3: Presentation - Group 4 (https://canvas.uw.edu/courses/1220635/assignments/4412735)	due by 12:30pm
	 Module 3: Presentation - Group 5 (https://canvas.uw.edu/courses/1220635/assignments/4412732)	due by 12:30pm
	 Module 3: Presentation - Group 6 (https://canvas.uw.edu/courses/1220635/assignments/4412733)	due by 12:30pm
Fri Oct 26, 2018	 Module 3: Question - Group 4 (https://canvas.uw.edu/courses/1220635/assignments/4413136)	due by 11:30am
	 Module 3: Question - Group 5 (https://canvas.uw.edu/courses/1220635/assignments/4413137)	due by 11:30am
	 Module 3: Question - Group 6 (https://canvas.uw.edu/courses/1220635/assignments/4413139)	due by 11:30am
Mon Oct 29, 2018	 Module 3: Paper (https://canvas.uw.edu/courses/1220635/assignments/4413307)	due by 11:59pm
Sun Nov 4, 2018	 Module 4: Presentation - Group 1 (https://canvas.uw.edu/courses/1220635/assignments/4412885)	due by 12:30pm
	 Module 4: Presentation - Group 2 (https://canvas.uw.edu/courses/1220635/assignments/4412908)	due by 12:30pm
	 Module 4: Presentation - Group 3 (https://canvas.uw.edu/courses/1220635/assignments/4412909)	due by 12:30pm
Mon Nov 5, 2018	 Module 4: Question - Group 1 (https://canvas.uw.edu/courses/1220635/assignments/4413172)	due by 11:30am
	 Module 4: Question - Group 2 (https://canvas.uw.edu/courses/1220635/assignments/4413209)	due by 11:30am
	 Module 4: Question - Group 3 (https://canvas.uw.edu/courses/1220635/assignments/4413210)	due by 11:30am

Date	Details	
Tue Nov 6, 2018	 Module 4: Presentation - Group 4 (https://canvas.uw.edu/courses/1220635/assignments/4412910)	due by 12:30pm
	 Module 4: Presentation - Group 5 (https://canvas.uw.edu/courses/1220635/assignments/4412912)	due by 12:30pm
	 Module 4: Presentation - Group 6 (https://canvas.uw.edu/courses/1220635/assignments/4412913)	due by 12:30pm
Wed Nov 7, 2018	 Module 4: Question - Group 5 (https://canvas.uw.edu/courses/1220635/assignments/4413218)	due by 11:30am
	 Module 4: Question - Group 6 (https://canvas.uw.edu/courses/1220635/assignments/4413219)	due by 11:30am
	 Module 4: Question - Group 4 (https://canvas.uw.edu/courses/1220635/assignments/4413216)	due by 11:59pm
Fri Nov 9, 2018	 Module 4: Paper (https://canvas.uw.edu/courses/1220635/assignments/4413308)	due by 11:59pm
Sun Nov 18, 2018	 Module 5: Presentation - Group 1 (https://canvas.uw.edu/courses/1220635/assignments/4413006)	due by 12:30pm
	 Module 5: Presentation - Group 2 (https://canvas.uw.edu/courses/1220635/assignments/4413012)	due by 12:30pm
	 Module 5: Presentation - Group 3 (https://canvas.uw.edu/courses/1220635/assignments/4413013)	due by 12:30pm
Mon Nov 19, 2018	 Module 5: Question - Group 1 (https://canvas.uw.edu/courses/1220635/assignments/4413234)	due by 11:30am
	 Module 5: Question - Group 2 (https://canvas.uw.edu/courses/1220635/assignments/4413235)	due by 11:30am
	 Module 5: Question - Group 3 (https://canvas.uw.edu/courses/1220635/assignments/4413236)	due by 11:30am
Tue Nov 20, 2018	 Module 5: Presentation - Group 4 (https://canvas.uw.edu/courses/1220635/assignments/4413014)	due by 12:30pm
	 Module 5: Presentation - Group 5 (https://canvas.uw.edu/courses/1220635/assignments/4413015)	due by 12:30pm
	 Module 5: Presentation - Group 6 (https://canvas.uw.edu/courses/1220635/assignments/4413016)	due by 12:30pm

Date	Details	
Wed Nov 21, 2018	 Module 5: Question - Group 4 (https://canvas.uw.edu/courses/1220635/assignments/4413237)	due by 11:30am
	 Module 5: Question - Group 5 (https://canvas.uw.edu/courses/1220635/assignments/4413238)	due by 11:30am
	 Module 5: Question - Group 6 (https://canvas.uw.edu/courses/1220635/assignments/4413239)	due by 11:30am
Mon Nov 26, 2018	 Module 5: Paper (https://canvas.uw.edu/courses/1220635/assignments/4413309)	due by 11:59pm
Sun Dec 2, 2018	 Module 6: Presentation - Group 1 (https://canvas.uw.edu/courses/1220635/assignments/4413080)	due by 12:30pm
	 Module 6: Presentation - Group 2 (https://canvas.uw.edu/courses/1220635/assignments/4413090)	due by 12:30pm
	 Module 6: Presentation - Group 3 (https://canvas.uw.edu/courses/1220635/assignments/4413091)	due by 12:30pm
Mon Dec 3, 2018	 Module 6: Question - Group 1 (https://canvas.uw.edu/courses/1220635/assignments/4413274)	due by 11:30am
	 Module 6: Question - Group 2 (https://canvas.uw.edu/courses/1220635/assignments/4413283)	due by 11:30am
	 Module 6: Question - Group 3 (https://canvas.uw.edu/courses/1220635/assignments/4413284)	due by 11:30am
Tue Dec 4, 2018	 Module 6: Presentation - Group 4 (https://canvas.uw.edu/courses/1220635/assignments/4413092)	due by 12:30pm
	 Module 6: Presentation - Group 5 (https://canvas.uw.edu/courses/1220635/assignments/4413093)	due by 12:30pm
	 Module 6: Presentation - Group 6 (https://canvas.uw.edu/courses/1220635/assignments/4413094)	due by 12:30pm
Wed Dec 5, 2018	 Module 6: Question - Group 4 (https://canvas.uw.edu/courses/1220635/assignments/4413286)	due by 11:30am
	 Module 6: Question - Group 5 (https://canvas.uw.edu/courses/1220635/assignments/4413288)	due by 11:30am
	 Module 6: Question - Group 6 (https://canvas.uw.edu/courses/1220635/assignments/4413287)	due by 11:30am
Fri Dec 7, 2018	 Module 6: Paper (https://canvas.uw.edu/courses/1220635/assignments/4413310)	due by 11:59pm

Date	Details	
Thu Dec 13, 2018	 Final Exam (https://canvas.uw.edu/courses/1220635/assignments/4413334)	due by 11:59pm
	 Question of the Day 1 (https://canvas.uw.edu/courses/1220635/assignments/4411703)	
	 Question of the Day 10 (https://canvas.uw.edu/courses/1220635/assignments/4479896)	
	 Question of the Day 2 (https://canvas.uw.edu/courses/1220635/assignments/4411706)	
	 Question of the Day 3 (https://canvas.uw.edu/courses/1220635/assignments/4411710)	
	 Question of the Day 4 (https://canvas.uw.edu/courses/1220635/assignments/4411711)	
	 Question of the Day 5 (https://canvas.uw.edu/courses/1220635/assignments/4411712)	
	 Question of the Day 6 (https://canvas.uw.edu/courses/1220635/assignments/4479891)	
	 Question of the Day 7 (https://canvas.uw.edu/courses/1220635/assignments/4479892)	
	 Question of the Day 8 (https://canvas.uw.edu/courses/1220635/assignments/4479894)	
	 Question of the Day 9 (https://canvas.uw.edu/courses/1220635/assignments/4479895)	

 (http://en.wikipedia.org/wiki/Public_domain) This course content is offered under a [Public Domain](http://en.wikipedia.org/wiki/Public_domain) (http://en.wikipedia.org/wiki/Public_domain) license. Content in this course can be considered under this license unless otherwise noted.