

Course Syllabus

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 Edit

INSTRUCTOR

Judit Marsillach, PhD (she/her/ella)

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Office: 202, Roosevelt Building

Office hours: By appointment

Dr. Judit Marsillach is an Assistant Professor in the Department of Environmental & Occupational Health Sciences at the University of Washington School of Public Health.

Dr. Marsillach's research involves proteomics and the identification and characterization of chemical modifications of certain proteins, also known as adducts, that can be used as biomarkers of exposure to certain environmental chemicals or biomarkers of susceptibility to disease development. Toxicants/environmental exposures of interest include pesticides, heavy metals (cadmium and manganese), traffic-related air pollution, wildfire smoke, volatile organic compounds, and mixtures in occupational settings, early life exposures, and aging population. Additionally, she is also investigating the effects of traffic-related air pollution and e-cigarette exposures on cardiometabolic, carcinogenic and neurodegenerative outcomes in animal models.



TEACHING ASSISTANT

Aesha Mokashi (she/her/hers)

Email: aesham@uw.edu (<mailto:aesham@uw.edu>)

Office hours: By appointment

Ms. Aesha Mokashi is a Master's student in the Department of Environmental & Occupational Health Sciences at the University of Washington School of Public Health.

Ms. Mokashi's research centers on the impacts of lead contaminated cosmetics in refugee and immigrant populations here in King County. In collaboration with [Dr. Diana Ceballos](https://deohs.washington.edu/faculty/diana-ceballos)  (<https://deohs.washington.edu/faculty/diana-ceballos>) and Public Health Seattle and King County, she is characterizing lead in traditional eyeliners worn by newcomer populations. Her aim is to determine characteristics that lead to high levels of lead in eyeliners with the



hopes of determining safer alternatives for these communities to use. She is also optimizing methods of field analysis using X-ray fluorescence in order to improve accuracy of lead testing during in-home investigations of lead-poisoned children and at community product testing events.

COURSE SYLLABUS

[Download the Course Syllabus here](#)

[\(https://canvas.uw.edu/courses/1719028/files/119556032?wrap=1\)](https://canvas.uw.edu/courses/1719028/files/119556032?wrap=1)

Course Description

In this course you will explore the intricate world of toxicology, gaining a deep understanding of how chemicals impact human and environmental health. From fundamental principles like dose-response relationships to pressing topics such as cancer, birth defects, and occupational hazards, you'll explore the real-world implications of toxic exposure. Through engaging lectures and assignments, you'll equip yourself with the knowledge and tools to advocate for a healthier future for all.

Course Learning Objectives

After completing this course, students should be able to:

- Outline relevant events in the history of toxicology, and the professional disciplines, job classifications and scientific fields occupied by toxicologists.
- List the main classes of toxicants.
- Describe the main factors influencing toxicity, including emerging factors such as racial and socioeconomic disparities.
- Summarize the basics of toxicant absorption, distribution, metabolism and excretion.
- Explain how environmental toxicants interact with cellular pathways leading to the development of diseases.
- Recall strategies to limit toxicant exposures inside and outside the workplace.
- Discuss, present, criticize and evaluate past and current events relevant to the field of toxicology.
- Develop increased knowledge of one or various toxicants of interest.
- Demonstrate effective oral and written communication skills, as well as teamwork.
- Reflect on the relevance of the field of toxicology to them as scientists and proactive members of the society.

Council on Education for Public Health (CEPH) Competencies

The School of Public Health (SPH) is accredited by the Council on Education for Public Health (CEPH). Competencies met by this course include:

D-10-1 Public Health Domains

- **Overview of Public Health:** Address the history and philosophy of public health as well as its core values, concepts, and functions across the globe and in society (this course covers public health history).
- **Role and Importance of Data in Public Health:** Address the basic concepts, methods, and tools of public health data collection, use, and analysis and why evidence-based approaches are an essential part of public health practice.
- **Human Health:** Address the underlying science of human health and disease including opportunities for promoting and protecting health across the life course (this course covers the science of human health and disease).
- **Determinants of Health:** Address the socio-economic, behavioral, biological, environmental, and other factors that impact human health and contribute to health disparities (this course covers: biological factors' impacts on human health and health disparities; environmental factors' impacts on human health and health disparities).
- **Health Policy, Law, Ethics, and Economics:** Address the basic concepts of legal, ethical, economic, and regulatory dimensions of health care and public health policy, and the roles, influences and responsibilities of the different agencies and branches of government (this course covers: legal dimensions of health care and public health policy; regulatory dimensions of health care and public health policy).

Course Format

Over the course, there will be content posted on Canvas to work on before and/or after each session. The expectation is that students come to class having already reviewed any content available on Canvas. There will be post-class weekly quizzes to ensure students understood and retained important information in each session. and completed any quizzes for each session. Participation (questions and comments) during the class is highly encouraged. All sessions will be recorded and uploaded to Canvas for instructional purposes related to this class. Students are not permitted to copy or share the recording with others. If you have privacy concerns about Zoom recordings in this class, please contact the course instructor.

There will be experts in some of the proposed topics providing guest lectures throughout the course.

The instructor welcomes any feedback you may have to improve their teaching and this course.

Useful Textbooks & Readings

Useful Textbooks:

- Casarett & Doull's Essentials of Toxicology, 4th Edition, Curtis D. Klaassen & John B Watkins III, McGraw Hill, 2021. (This textbook is available as an eBook through the UW Libraries, or through this [website](https://accesspharmacy-mhmedical-com.offcampus.lib.washington.edu/book.aspx?bookid=3000) [↗](https://accesspharmacy-mhmedical-com.offcampus.lib.washington.edu/book.aspx?bookid=3000) (<https://accesspharmacy-mhmedical-com.offcampus.lib.washington.edu/book.aspx?bookid=3000>).
- A Small Dose of Toxicology: The Health Effects of Common Chemicals, 3rd Edition, Steve Gilbert, 2019 (available as an eBook [here](https://www.asmalldoseoftoxicology.org/about-the-book) [↗](https://www.asmalldoseoftoxicology.org/about-the-book) (<https://www.asmalldoseoftoxicology.org/about-the-book>)).
- Introduction to Toxicology, 3rd Edition by John Timbrell, Taylor & Francis, 2002.

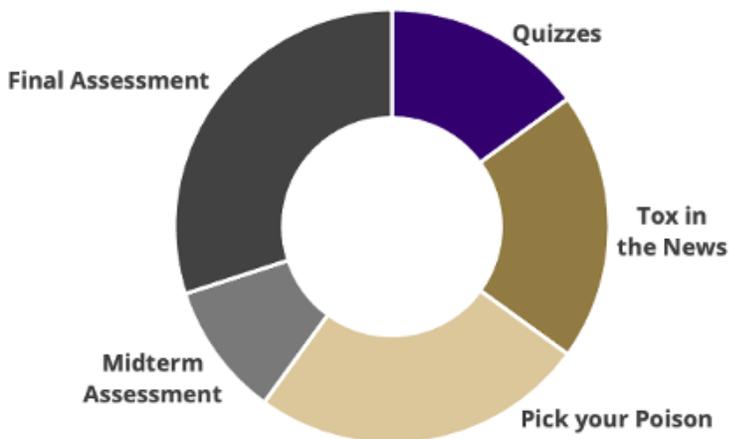
Recommended, optional, or supplementary readings:

Most required readings will be available as Canvas Pages or Adobe Acrobat files that can be viewed on Canvas or downloaded. In some cases, the readings may be links to websites. Videos will also be available on Canvas Pages.

Grading

Final grades will be determined by:

- Weekly quizzes (15%)
- Assignments (20%): Toxicology in the News (see below)
- Individual Project (25%): Pick your Poison project (see below)
- Midterm assessment (10%)
- Final assessment (30%)



Toxicology in the News: You will be assigned a date to present and post about a recent (within the past 3 months) toxicology-related event sourced from newspapers, news outlets, or reputable online platforms. The objective of this assignment is to highlight the relevance of toxicology in everyday life. Additional instructions will be provided on Canvas.

Pick your Poison project: You will choose a toxicant of personal interest, ranging from those relevant to your birthplace to those featured in the news or of particular interest. This selection must be made within the first 2 weeks of the quarter. Throughout the course, you'll progressively develop your project, incorporating newfound concepts and toxicological insights related to your chosen toxicant. Feedback will be provided throughout the course. At the end of the quarter, you will submit a final report. Further details will be provided on Canvas.

To avoid having more than one student writing a project on the same toxicant, be sure to have your toxicant approved by the instructor as soon as it is chosen.

Grading Criteria

A 4.0 scale will be calculated using the following conversion:

4.0 Scale	Percentage	4.0 Scale	Percentage	4.0 Scale	Percentage
4.0	100%	3.1	86%	1.7	72%
4.0	99%	3.0	85%	1.6	71%
3.9	98%	2.9	84%	1.5	70%
3.9	97%	2.8	83%	1.4	69%
3.8	96%	2.7	82%	1.3	68%
3.8	95%	2.6	81%	1.2	67%
3.7	94%	2.5	80%	1.1	66%
3.7	93%	2.4	79%	1.0	65%
3.6	92%	2.3	78%	0.9	64%
3.6	91%	2.2	77%	0.8	63%
3.5	90%	2.1	76%	0.7	62%
3.4	89%	2.0	75%	0.7	61%
3.3	88%	1.9	74%	0.7	60%
3.2	87%	1.8	73%		

Late assignment policy

All quizzes, assignments, and individual projects must be submitted through Canvas by the due date. Please, reach out to us if you cannot submit an assignment on time. The instructor understands that in some instances, certain personal situations may make it impossible to submit specific material on time. For this reason, there is no penalty for the submission of late assignments, but the instructor reserves the right to institute a penalty of 10% if students do not submit materials within the required timeframe on multiple occasions.

Course Tentative Schedule

Below is a tentative lecture schedule. Any changes will be announced in class and/or posted on Canvas.

Tentative schedule of ENVH 405

Date	Topic	Guest Instructor
3/25	Overview/History of Toxicology	

Date	Topic	Guest Instructor
3/27	Basic Principles of Toxicology	
3/29	Biological Disposition I-absorption, distribution	
4/1	Biological Disposition II – biotransformation	
4/3	Biological Disposition III – excretion	
4/5	Mechanisms/Factors that Modify Responses	
4/8	Toxicity Testing Procedures	
4/10	Toxic Metals I	Ms. Aesha Mokashi
4/12	Toxic Metals II	Ms. Aesha Mokashi
4/15	Hepatotoxicity	Dr. Julia Cui
4/17	GI Toxicology and the Microbiome	Dr. Julia Cui
4/19	Neurotoxicology	
4/22	Genetic Toxicology and Chemical Carcinogenesis	
4/24	Developmental and Reproductive Toxicology	Mr. Brad Hansen
4/26	Drugs as Toxicants	Dr. Michael Garry
4/29	Ecotoxicology	
5/1	Natural Toxins	

Date	Topic	Guest Instructor
5/3	Midterm Assessment	
5/6	Food Additives and Contaminants	
5/8	Household Products	
5/10	Pesticides I	
5/13	Pesticides II	
5/15	Pulmonary Toxicology	Mr. Elijah Scott
5/17	Occupational Toxicology	Dr. Brittany Weldon
5/20	Regulatory Toxicology	
5/22	Cardiovascular Toxicology	Mr. Allen Louie
5/24	Risk Assessment	
5/27	Memorial Day – no class	
5/29	Review Session for final exam	
5/31	Emerging Factors Affecting Toxicity & farewell!	
6/3	Final Assessment	

The course policies & resources can be found on the [full syllabus document](https://canvas.uw.edu/courses/1719028/files/119556032?wrap=1) (<https://canvas.uw.edu/courses/1719028/files/119556032?wrap=1>).

Course Summary:

Date	Details	Due
Thu Apr 4, 2024	 Quiz #1: Sessions 1-3 https://canvas.uw.edu/courses/1719028/assignments/9142953	due by 11:59pm
Mon Apr 8, 2024	 Quiz #1: Sessions 1-3 https://canvas.uw.edu/courses/1719028/assignments/9142953 (2 students)	due by 11:59pm
Mon Apr 8, 2024	 Toxicology in the News https://canvas.uw.edu/courses/1719028/assignments/9143001 (6 students)	due by 11:59pm
Thu Apr 11, 2024	 Quiz #2 - Sessions 4-6 https://canvas.uw.edu/courses/1719028/assignments/9142969	due by 11:59pm
Mon Apr 15, 2024	 Tox in the News Quiz #1 https://canvas.uw.edu/courses/1719028/assignments/9142976	due by 11:59pm
Mon Apr 15, 2024	 Quiz #2 - Sessions 4-6 https://canvas.uw.edu/courses/1719028/assignments/9142969 (2 students)	due by 11:59pm
Mon Apr 15, 2024	 Toxicology in the News https://canvas.uw.edu/courses/1719028/assignments/9143001 (6 students)	due by 11:59pm
Wed Apr 17, 2024	 Toxicology in the News https://canvas.uw.edu/courses/1719028/assignments/9143001 (1 student)	due by 11:59pm
Thu Apr 18, 2024	 Quiz #3 - Sessions 7-9 https://canvas.uw.edu/courses/1719028/assignments/9142941	due by 11:59pm
Fri Apr 19, 2024	 Tox in the News Quiz #1 https://canvas.uw.edu/courses/1719028/assignments/9142976 (2 students)	due by 11:59pm
Mon Apr 22, 2024	 Quiz #3 - Sessions 7-9 https://canvas.uw.edu/courses/1719028/assignments/9142941 (2 students)	due by 11:59pm
Mon Apr 22, 2024	 Tox in the News Quiz #2 https://canvas.uw.edu/courses/1719028/assignments/9142980	due by 11:59pm

Date	Details	Due
	 Toxicology in the News https://canvas.uw.edu/courses/1719028/assignments/9143001 due by 11:59pm (7 students)	
Thu Apr 25, 2024	 Quiz #4: Sessions 10-12 https://canvas.uw.edu/courses/1719028/assignments/9142960 due by 11:59pm	
	 April 22: In-class group activity – Chemical Carcinogenesis https://canvas.uw.edu/courses/1719028/assignments/9142943 due by 11:59pm	
Fri Apr 26, 2024	 Tox in the News Quiz #2 https://canvas.uw.edu/courses/1719028/assignments/9142980 due by 11:59pm (2 students)	
	 Pick your Poison - Assignment #1 https://canvas.uw.edu/courses/1719028/assignments/9142994 due by 11:59pm	
	 Tox in the News Quiz #3 https://canvas.uw.edu/courses/1719028/assignments/9142958 due by 11:59pm	
Mon Apr 29, 2024	 Toxicology in the News https://canvas.uw.edu/courses/1719028/assignments/9143001 due by 11:59pm (6 students)	
	 Quiz #4: Sessions 10-12 https://canvas.uw.edu/courses/1719028/assignments/9142960 due by 11:59pm (2 students)	
Wed May 1, 2024	 Midterm Assessment https://canvas.uw.edu/courses/1719028/assignments/9142950 due by 1:30pm (1 student)	
	 Midterm Assessment https://canvas.uw.edu/courses/1719028/assignments/9142950 due by 1:35pm (1 student)	
Thu May 2, 2024	 Quiz #5: Sessions 13-15 https://canvas.uw.edu/courses/1719028/assignments/9142988 due by 11:59pm	
Fri May 3, 2024	 Midterm Assessment due by 2:30pm	

Date	Details	Due
	(https://canvas.uw.edu/courses/1719028/assignments/9142950)	
	 Tox in the News Quiz #3 (https://canvas.uw.edu/courses/1719028/assignments/9142958) due by 11:59pm (2 students)	
	 Pick your Poison - Assignment #2 (https://canvas.uw.edu/courses/1719028/assignments/9142995)	due by 11:59pm
	 Midterm Assessment (https://canvas.uw.edu/courses/1719028/assignments/9142950) due by 12pm (2 students)	
	 Quiz #5: Sessions 13-15 (https://canvas.uw.edu/courses/1719028/assignments/9142988) due by 11:59pm (1 student)	
Mon May 6, 2024	 Tox in the News Quiz #4 (https://canvas.uw.edu/courses/1719028/assignments/9142956)	due by 11:59pm
	 Toxicology in the News (https://canvas.uw.edu/courses/1719028/assignments/9143001) due by 11:59pm (6 students)	
Tue May 7, 2024	 May 8th: Pre-class activity - Household Toxicants (https://canvas.uw.edu/courses/1719028/assignments/9142993)	due by 11:59pm
Thu May 9, 2024	 Quiz #6: Sessions 16-17 (https://canvas.uw.edu/courses/1719028/assignments/9142949)	due by 11:59pm
Fri May 10, 2024	 Pick your Poison - Assignment #2 (https://canvas.uw.edu/courses/1719028/assignments/9142995) (1 student)	due by 11:59pm
	 Tox in the News Quiz #4 (https://canvas.uw.edu/courses/1719028/assignments/9142956) due by 11:59pm (2 students)	
	 Pick your Poison - Assignment #3 (https://canvas.uw.edu/courses/1719028/assignments/9142996)	due by 11:59pm

Date	Details	Due
Mon May 13, 2024	 Quiz #5: Sessions 13-15 https://canvas.uw.edu/courses/1719028/assignments/9142988 due by 11:59pm (1 student)	
	 May 13th: In-class group activity – Midterm Assessment https://canvas.uw.edu/courses/1719028/assignments/9142946	due by 2:30pm
	 Quiz #6: Sessions 16-17 https://canvas.uw.edu/courses/1719028/assignments/9142949 due by 11:59pm (2 students)	
	 Tox in the News Quiz #5 https://canvas.uw.edu/courses/1719028/assignments/9142987	due by 11:59pm
	 Toxicology in the News https://canvas.uw.edu/courses/1719028/assignments/9143001 due by 11:59pm (6 students)	
Thu May 16, 2024	 Quiz #7: Sessions 18-20 https://canvas.uw.edu/courses/1719028/assignments/9332664	due by 11:59pm
	 May 13th: In-class group activity – Pesticides II https://canvas.uw.edu/courses/1719028/assignments/9142948	due by 11:59pm
Fri May 17, 2024	 Pick your Poison - Assignment #3 https://canvas.uw.edu/courses/1719028/assignments/9142996 due by 11:59pm (1 student)	
	 Tox in the News Quiz #5 https://canvas.uw.edu/courses/1719028/assignments/9142987 due by 11:59pm (2 students)	
	 Pick your Poison - Assignment #4 https://canvas.uw.edu/courses/1719028/assignments/9142997	due by 11:59pm
Mon May 20, 2024	 May 13th: In-class group activity – Pesticides II https://canvas.uw.edu/courses/1719028/assignments/9142948 due by 11:59pm (2 students)	

Date	Details	Due
	 May 20: In-class group activity - Regulatory Toxicology https://canvas.uw.edu/courses/1719028/assignments/9142940	due by 11:59pm
	 Quiz #7: Sessions 18-20 https://canvas.uw.edu/courses/1719028/assignments/9332664 (2 students)	due by 11:59pm
	 Tox in the News Quiz #6 https://canvas.uw.edu/courses/1719028/assignments/9142965	due by 11:59pm
	 Toxicology in the News https://canvas.uw.edu/courses/1719028/assignments/9143001 (6 students)	due by 11:59pm
Thu May 23, 2024	 Quiz #8: Sessions 21-23 https://canvas.uw.edu/courses/1719028/assignments/9142974	due by 11:59pm
	 May 20: In-class group activity - Regulatory Toxicology https://canvas.uw.edu/courses/1719028/assignments/9142940 (2 students)	due by 11:59pm
Fri May 24, 2024	 Tox in the News Quiz #6 https://canvas.uw.edu/courses/1719028/assignments/9142965 (2 students)	due by 11:59pm
	 Pick your Poison - Assignment #5 https://canvas.uw.edu/courses/1719028/assignments/9142998	due by 11:59pm
	 Tox in the News Quiz #7 https://canvas.uw.edu/courses/1719028/assignments/9142947	due by 11:59pm
Mon May 27, 2024	 Quiz #8: Sessions 21-23 https://canvas.uw.edu/courses/1719028/assignments/9142974 (2 students)	due by 11:59pm
Tue May 28, 2024	 Toxicology in the News https://canvas.uw.edu/courses/1719028/assignments/9143001 (6 students)	due by 11:59pm
Thu May 30, 2024	 Quiz #9 (Last!): Sessions 24-26	due by 11:59pm

Date	Details	Due
	https://canvas.uw.edu/courses/1719028/assignments/9142939	
	 Pick your Poison - Final Assignment https://canvas.uw.edu/courses/1719028/assignments/9142999	due by 11:59pm
Fri May 31, 2024	 Pick your Poison - Overview https://canvas.uw.edu/courses/1719028/assignments/9143000	due by 11:59pm
	 Tox in the News Quiz #7 https://canvas.uw.edu/courses/1719028/assignments/9142947 (2 students)	due by 11:59pm
	 Final Assessment https://canvas.uw.edu/courses/1719028/assignments/9142970	due by 4:20pm
Mon Jun 3, 2024	 Quiz #9 (Last!): Sessions 24-26 https://canvas.uw.edu/courses/1719028/assignments/9142939 (2 students)	due by 11:59pm
	 Tox in the News Quiz #8 (last one!) https://canvas.uw.edu/courses/1719028/assignments/9332669 (2 students)	due by 11:59pm
Fri Jun 7, 2024	 Tox in the News Quiz #8 (last one!) https://canvas.uw.edu/courses/1719028/assignments/9332669	due by 11:59pm
	 Dioxins vs Forever Chemicals - Extra credit! https://canvas.uw.edu/courses/1719028/assignments/9142992	due by 11:59pm
	 "Poisons" already chosen for "Pick your Poison" https://canvas.uw.edu/courses/1719028/assignments/9142990	
	 April 8th: In-class group activity https://canvas.uw.edu/courses/1719028/assignments/9300782	
	 Articles already picked for Toxicology in the News	

Date	Details	Due
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<https://canvas.uw.edu/courses/1719028/assignments/9142991>
