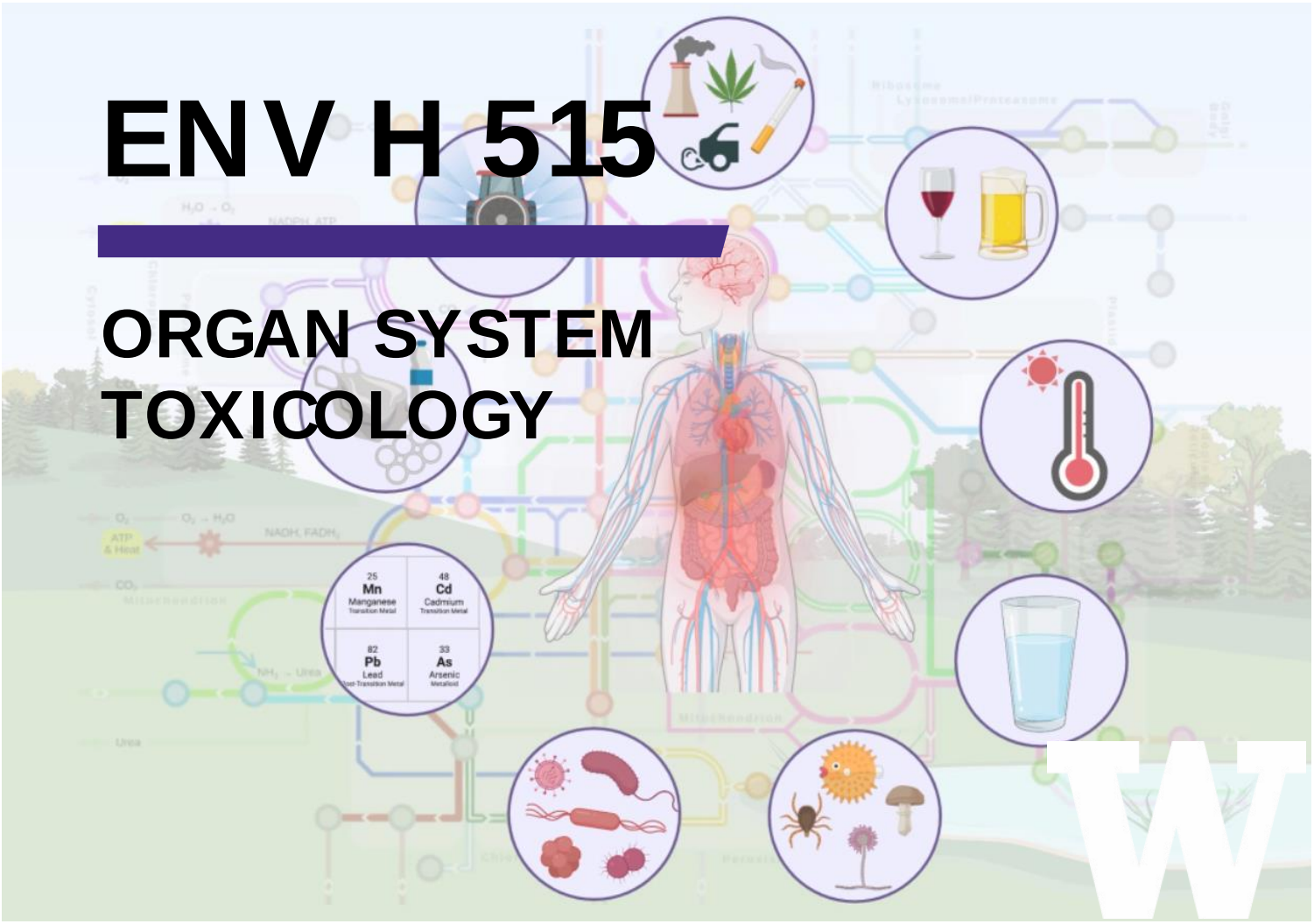
ENV H 515

ORGAN SYSTEM TOXICOLOGY



M / W 11:30 - 12:50
F 11:30 - 12:30

4 cr

Instructor: Judit Marsillach

Prerequisites: ENV H 503

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

CONTACT INFORMATION

Instructor: Judit Marsillach (*she/her/hers)*, Assistant Professor
Department of Environmental & Occupational Health Sciences (DEOHS)
Contact: jmarsi@uw.edu
Office hours: By appointment

COURSE TIMES AND LOCATIONS

Lecture: Mondays&Wednesdays, 11:30 am - 12:50 pm; Fridays, 11:30 am – 12:20 pm
Location: Health Sciences Education Building (HSEB), room 421

LAND ACKNOWLEDGEMENT

The University of Washington acknowledges the Coast Salish people of this land, the land which touches the shared waters of all tribes and bands within the Duwamish, Suquamish, Tulalip and Muckleshoot nations.

WINTER QUARTER RESPIRATORY ILLNESSES - 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. Thank you for your patience and support as we try to maintain in-person learning while staying safe!

Additional recommendations include:

1. 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.
2. Get your annual flu shot.
3. **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.
4. **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.
5. **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.

COURSE DESCRIPTION

Welcome to ENV H 515! ENV H 515 is the first course of a two-course sequence (ENV H 515/516). The overall goal of the series is for students to expand the basic concepts and mechanisms of toxicology gained in ENV H 503 to understand how chemicals interact with biological systems to produce adverse effects, i.e., the science of toxicology. Thus, prerequisites for this course include having taken ENV H 503.

ENV H 515 focuses on **organ toxicology and organ systems** and is organized into modules according to target organs and/or organ systems. ENV H 516 focuses on the most important classes of toxic chemicals (as well as physical and biological agents).

COURSE LEARNING OBJECTIVES

After completing this course, students should be able to:

- Outline the biochemical, cellular, and physiological responses to toxicant-induced injury.
- Summarize the anatomy and function of major organs in the human body.
- Describe the organ-specific toxic effects of common environmental toxicants.
- Identify commonly used biomarkers of exposure and disease in relation to organ toxicity.
- Determine the most appropriate methods to analyze organ/tissue toxicity/injury.
- Evaluate the status of the most current research findings on toxicants.
- Develop increased knowledge of one or various target organ toxicants of interest.
- Demonstrate effective oral and written communication skills, as well as teamwork.

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 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 Toxicology, The Basic Science of Poisons, 9th 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)

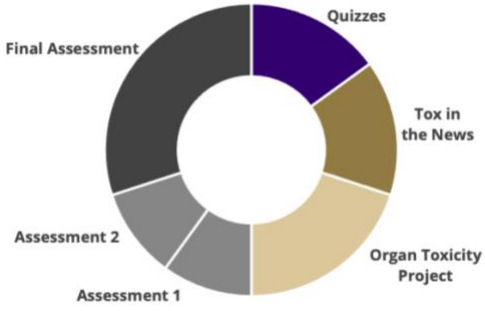
Recommended, optional, or supplementary readings

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%)
- Assessments 1 & 2 (10% each, 20% total)
- Final assessment (30%)
- Assignment (15%): Toxicology in the News (see below)
- Group Project (20%): Organ Toxicity Project (see below)



Toxicology in the News: You will be randomly assigned a date to post about a current (within the past 3 months) toxicology-related event found in newspapers, the news, or reliable online websites.

The goal of this assignment is to get you used to searching and reading news related to toxicology and to create a critical eye on these types of (commonly) non-scholarly sources. Further details will be provided on Canvas and during the first session.

Organ Toxicity Project: In groups of 1-3, you will pick a specific environmental toxicant that you are interested in (it can be from toxicants that may be relevant to the area you were born to toxicants that you have seen on the news or that you are interested in learning more about them). You will pick this toxicant within the first 3 weeks of the quarter and develop your Project throughout the quarter, with an emphasis on the toxicant's ADME, the organ targeted, and the mechanisms of toxicity. At the end of the quarter, you will prepare a poster and an oral presentation. Further details will be provided on Canvas.

To avoid having more than one group writing a project on the same toxicant and target organ, 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	≧ 98.0%	2.8	< 85.8%	1.6	< 72.3%
3.9	< 98.0%	2.7	< 84.7%	1.5	< 71.2%
3.8	< 97.0%	2.6	< 83.5%	1.4	< 70.1%
3.7	< 95.9%	2.5	< 82.4%	1.3	< 69.0%
3.6	< 94.8%	2.4	< 81.3%	1.2	< 67.8%
3.5	< 93.6%	2.3	< 80.2%	1.1	< 66.7%
3.4	< 92.5%	2.2	< 79.1%	1.0	< 65.6%
3.3	< 91.4%	2.1	< 77.9%	0.9	< 64.5%
3.2	< 90.3%	2.0	< 76.8%	0.8	< 64.3%
3.1	< 89.2%	1.9	< 75.7%	0.7	< 62.2%
3.0	< 88.0%	1.8	< 74.6%	0.0	< 61.1%
2.9	< 86.9%	1.7	< 73.5%		

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.

Date	Topic	Guest Instructor
1/4	Introduction & ADME	
1/6	Mechanisms and fate of chemical interaction with biological systems	
1/9	Cell & Tissue Response to Injury	
1/11	Toxicology of the Liver	Dr. Julia Cui
1/13	Toxicology of the GI system	Dr. Julia Cui
1/16	Martin Luther King Jr. Day – **no class**	
1/18	Techniques: from Histopathology to Omics	
1/20	Immunotoxicology I	
1/23	Neurotoxicology I	
1/25	Neurotoxicology II	
1/27	Immunotoxicology II	
1/30	Toxicology of the Kidney I	Dr. Edward Kelly
2/1	Toxicology of the Kidney II	Dr. Edward Kelly
2/3	**Exam 1** (covers 1/2 - 1/27)	
2/6	Developmental/Repro Toxicology I	Dr. Elaine Faustman
2/8	Developmental/Repro Toxicology II	Dr. Elaine Faustman
2/10	Toxicology of the Skin	Dr. Cecile Krejsa
2/13	Toxicology of the Sensory Systems	Dr. Cecile Krejsa
2/15	Cardiovascular Toxicology I	
2/17	Cardiovascular Toxicology II	
2/20	Presidents' Day – **no class**	
2/22	Endocrine System Toxicology	
2/24	**Exam 2** (covers 2/1 – 2/17)	
2/27	Respiratory System Toxicology I	Dr. Terrance Kavanagh
3/1	Respiratory System Toxicology II	Dr. Terrance Kavanagh
3/3	Blood Toxicity	
3/6	Behavioral Toxicology	Dr. Toby Cole

Date	Topic	Guest Instructor
3/8	Student Presentation I	
3/10	Student Presentation II, Review Session & Farewell	
3/15	**Final Assessment** (covers all sessions)	

COMMUNICATION AND WRITING SKILLS

Communication through writing and speaking is an important transferable skill for all career pathways. Establishing a strong foundation in communication skills will help you be successful throughout your future course work and career. Therefore, this course includes assignments with the goal to help you identify areas of strength and improvement in your communication. If you feel that you could benefit from additional opportunities to improve your writing skills in particular, a list of resources at the UW and others accessible online can be found on the SPH website at here.

IMPORTANT POLICIES & RESOURCES

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 478-121). 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.

ACCESS AND ACCOMODATIONS

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.

RELIGIOUS ACCOMODATIONS

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. Accommodations must be requested within the first two weeks of this course using the Religious Accommodations Request form.

EQUITY, DIVERSITY & INCLUSION (EDI)

Diverse backgrounds, embodiments and experiences are essential to the critical thinking endeavor at the heart of University education. In SPH, we are expected:

1. To respect individual differences, which may include, but are not limited to, age, cultural background, disability, ethnicity, family status, gender, immigration status, national origin, race, religion, sex, sexual orientation, socioeconomic status and veteran status.
2. To engage respectfully in the discussion of diverse worldviews and ideologies embedded in course readings, presentations and artifacts, including those course materials that are at odds with personal beliefs and values.
3. To encourage students with concerns about classroom climate to talk to their instructor, adviser, a member of the departmental or SPH EDI Committee, the Assistant Dean for EDI, or the program's director.

CLASSROOM CLIMATE

We are co-creators of our learning environment. It is our collective responsibility to develop a supportive learning environment for everyone. Listening with respect and an open mind, striving to understand others' views, and articulating your own point of view will help foster the creation of this environment. We engage our differences with the intent to build community, not to put down the other and distance our self from the other. Being mindful to not monopolize discussion and/or interrupt others will also help foster a dialogic environment.

The following guidelines can add to the richness of our discussion:

- We assume that persons are always doing the best that they can, including the persons in this learning environment.
- We acknowledge that systematic oppression exists based on privileged positions and specific to race, gender, class, religion, sexual orientation, and other social variables and identities.
- We posit that assigning blame to persons in socially marginal positions is counter-productive to our practice. We can learn much about the dominant culture by looking at how it constructs the lives of those on its social margins.
- While we may question or take issue with another class member's ideology, we will not demean, devalue, or attempt to humiliate another person based on her/his experiences, value system, or construction of meaning.
- We have a professional obligation to actively challenge myths and stereotypes about our own groups and other groups so we can break down the walls that prohibit group cooperation and growth.

[Adapted from Lynn Weber Cannon (1990). Fostering positive race, class and gender dynamics in the classroom. *Women Studies Quarterly, 1 & 2, 126-134*.]

We are a learning community. As such, we are expected to engage with difference. Part of functioning as a learning community is to engage in dialogue in respectful ways that supports learning for all of

us and that holds us accountable to each other. Our learning community asks us to trust and take risks in being vulnerable.

Here are some guidelines that we try to use in our learning process:

- LISTEN WELL and be present to each member of our group and class.
- Assume that I might miss things others see and see things others miss.
- Raise my views in such a way that I encourage others to raise theirs.
- Inquire into others' views while inviting them to inquire into mine.
- Extend the same listening to others I would wish them to extend to me.
- Surface my feelings in such a way that I make it easier for others to surface theirs.
- Regard my views as a perspective onto the world, not the world itself.
- Beware of either-or thinking.
- Beware of my assumptions of others and their motivations.
- Test my assumptions about how and why people say or do things.
- Be authentic in my engagement with all members of our class.

PERSONAL PRONOUNS

We share our pronouns because we strive to cultivate an inclusive environment where people of all genders feel safe and respected. We cannot assume we know someone's gender just by looking at them. So, we invite everyone to share their pronouns.

BIAS CONCERNS

The Office of the Dean has a student concern policy, a faculty concern policy and standard HR procedures for staff concerns. Our 2018 climate survey states that most people in SPH do not report bias incidents because they do not know where to go. Students are encouraged to report any incidents of bias to someone they feel comfortable with, including instructors, advisers or department staff. They can email dcinfo@uw.edu for immediate follow up. Bias concerns can be anonymously and confidentially reported at this link https://sph.washington.edu/about/diversity/bias-concerns. Data is collected by the Assistant Dean for EDI and the Director of Program Operations for Student and Academic Services and tracked for resolution and areas are identified for further training.

SEXUAL HARASSMENT

Sexual harassment is a form of harassment based on the recipient's sex that is characterized by:

1. Unwelcome sexual advances, requests for sexual favors, or other verbal or physical conduct of a sexual nature by a person who has authority over the recipient when:
   - Submission to such conduct is an implicit or explicit condition of the individual's employment, academic status, or ability to use University facilities and services, or
   - Submission to or rejection of the conduct affects tangible aspects of the individual's employment, academic status, or use of University facilities.
2. Unwelcome and unsolicited language or conduct that creates an intimidating, hostile, or offensive working or learning environment, or has the purpose or effect of unreasonably interfering with an individual's academic or work performance.

If you believe that you are being harassed, or have observed harassment, you can report it to SPH using the bias concerns link. The University also has designated offices to help you: SafeCampus;

Office of the Ombud; Title IX Investigation Office; and University Complaint Investigation and Resolution Office.