ENV H 593 A Current Topics in Risk Assessment:
"Integrating Models in Risk Assessment: Case Examples Across Exposome and GeoHealth."

Spring Quarter 2023

CONTACT INFORMATION

Instructor: Dr. Elaine M. Faustman, **Professor, DEOHS**
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Office hours: By Appointment

Dr. Elaine M. Faustman (pronouns: she/her/hers), Professor and Director of the Institute of Risk Analysis and Risk Communication, School of Public Health, University of Washington, Seattle. Dr. Faustman directs the Center for Children's Health Research and directed the Pacific Northwest Center for the National Children's Study and the Oceans and Human Health Center. She is an elected fellow of the American Association for the Advancement of Science and the Society for Risk Analysis. She has served on the USEPA Science Advisory Board and chaired the National Academy of Sciences Committee on Developmental Toxicology. She has also served on the National Advisory Environmental Health Sciences Council, NIEHS-NTP Board of Scientific Counselors and Committee on Alternative Toxicology Methods, National Academy of Sciences Committee on Toxicology and the Institute of Medicine Upper Reference Levels of Nutrient Subcommittee of the Food and Nutrition Board. She has served as the Secretary General for the International Union of Toxicology (IUTOX) and is currently a member of the International Science Council (ISC) World Data Systems Advisory Board. For over 2 decades she has been involved and directed Stakeholder forums and Community Based Participatory Research for DOE, EPA and NIH. She currently serves on the ISC CODATA Citizen Sciences Task group. Her research expertise is on integrative scientific approaches including identifying molecular mechanisms of developmental, reproductive, and neuro toxicants, characterizing in vitro techniques for toxicology assessment, and developing biological and exposure based dose-response models. She has over 200 peer reviewed research publications and reports.

Teaching Assistants

Yingzhu Li, lyingzhu@uw.edu, By Appointment

Dr. Yingzhu Li is a postdoctoral scholar in the Department of Environmental and Occupational Health Sciences at the University of Washington. She earned her Ph.D. degree in human health risk assessment for engineered nanoparticles at the University College Dublin. She has experience in the establishment of risk assessment frameworks from hazard identification and exposure assessment to the final risk characterization. She's currently working on projects related to risk evaluation of ocean contaminants to nearshore communities and the ecological environment. Her participation in this course aims to help

students enhance the understanding of the current risk assessment frameworks and their conceptualization, development, and practice.

Course times and locations

Lecture: Tuesday's from 1:30pm-3:20pm, Health Sciences Education Building (HSEB) 430

LAND ACKNOWLEDGEMENT

Washington State is [home](#) to 29 federally recognized and five unrecognized tribes. 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.

ILLNESS PROTOCOLS AND SAFETY

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.

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 spring 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 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

Risk Assessment can provide an excellent frame for identifying and characterizing Environmental Health issues however to truly integrate necessary data from multi-disciplines and applications appropriate for evaluating mixtures of environmental compounds and exposures across life-course and space and time we need to look at additional methods and models. This course is designed to examine examples of these additional models and to do so using Exposomic and GeoHealth based lenses. The course will emphasize quantitative methods of analysis when available and provide an introduction as well as a critic of application of these newly developing biostatical and conceptual methods. It will accomplish these goals by using case studies developed from the NIH Children's programs and Human Health

Exposure Resource (HHEAR), projects from Oceans and Human Health as well as case studies available from Built Environment and GeoHealth models used to understand watershed and disaster data.   From the start to the final discussion, all approaches in class will be constructed within an overall risk assessment framing construct.

Course Specific Learning Objectives

At the end of the course, students shall be able to:

Describe Exposome approaches and identify new emerging themes, resources and statistical methods available for this research

Describe how this information might be used for risk management and policy applications to protect vulnerable underserved populations

Describe GeoHealth based approaches and identify new emerging themes, resources and statistical methods available for this research

Experience with optional "hands- on" experiences with these modeling techniques

Demonstrate how to apply these methods and concepts for Risk Assessment applications

Discuss how these new methods might impact your own research

OVERALL LEARNING OBJECTIVES

After completing this course, students will be able to:
- Think critically about risk assessment by completing reading assignments and participating in class discussions.
- Communicate the concept of integrated risk assessment and risk communication.
- Explain the risk assessment framework as it relates specifically to the current quarter topic.
- Analyze assigned readings and interpret their relevance to not only the quarter topic but also their applicability and generalizability to risk assessment topics at large.
- Summarize key points from assigned journal articles or other required readings.
- Prepare and deliver an oral presentation(s) discussing the required reading.
- Critique risk assessment applications as they relate to the current quarter topic.
- Identify risk assessment strengths and challenges, as well as the role of uncertainty.
- Develop skills to think critically about the methods and tools used for assessment, management, and communication of risk.

Course Requirements

Reminder this class is a journal club so please come to each session prepared to share your reading reports with your colleagues. Please use the "Article/ White paper Report Form Template" to structure your review. Please share a few slides that highlight your points. Remember that others in the class room will not have necessarily read the same papers so include enough information to allow them to have context for your report. We will always be able to pull up the original article but sometimes your tailored slides facilitate the discussion.

You will be requested to review one of the readings/ articles for each class and to complete 5 of the article report forms. If you will be missing class, please send your review by email.

You will also, by the end of the class, be requested to complete one Case Study report relevant to the course topics. Note that this report will be a critic of several of the concepts, methods or other case studies discussed during the term. It should be more of a summary of lessons learned from some of the specific sessions. It should describe how what you have learned relates to your research and to the broader topic of risk assessment. Total page limits for this assignment is 3 pages double spaced. We will discuss further in class the purpose and intent of this report.

GRADING

- **50% Weekly Discussion Participation and Related Assignments:** Weekly summations and presentation of key points from readings and respectful engagement in substantive in-class discussions.
- **25% FIVE Article Reports -** See the template at the end of the syllabus and limit your responses to 2 pages double spaced. Reports will be graded for completeness and thoughtfulness. Reports should be submitted on Canvas each week before class starts. Please post the article you selected on the Canvas Discussions Page. You will need to submit five Article Reports throughout the quarter.
- **25% In-Class Presentation and report –** Presentation of your Case Study report. Please use the outline provided to facilitate/ order your comments. Please limit your response to 3 pages double spaced. You will be required to submit ONE case study report on Canvas for the quarter. In addition to the report, please prepare a brief presentation (about 10 minutes) with 4-6 figures/tables to support your observations.

COURSE SESSION SCHEDULE

Include dates of class meetings and corresponding topics, preparatory work, instructor (if multiple for class), due dates, etc.

Date	Topic	Instructor	Reading
Session 1 - 03/28/23	Introduction to course content and focus Intrduction of course paricipants and co-creation of case studies	Faustman/Li	No Required Readings prior to first session.
Session 2 - 04/04/23	Exposomics What is it? How is it used, Example case studies under this topic	Faustman/Li	Selected readings will be posted
Session 3 - 04/11/23	New statistical methods used for Exposomic research	Faustman/Li	Selected readings will be posted
Session 4 - 04/18/23	Exposomic Resources	Faustman/Li	Selected readings will be posted
Session 5 - 04/25/23	Defining Geo Health	Faustman/Li	Selected readings will be posted
Session 6 - 05/02/23	New statistical methods used for Geo Health	Faustman/Li	Selected readings will be posted
Session 7 - 05/09/23	Example Case study resources for Geo Health	Faustman/Li	Selected readings will be posted
Session 8 - 05/16/23	TBD	Faustman/Li	Selected readings will be posted
Session 9 - 05/23/23	Student Case Studies	Faustman/Li	No additiona readings assigned
Session 10 - 05/30/23	Student Case Studies Shared Lessons Learned	Faustman/Li	No additional reading assigned

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 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 Accommodations

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 Accommodations

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 (https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/). Accommodations must be requested within the first two weeks of this course using the Religious Accommodations Request form (https://registrar.washington.edu/students/religious-accommodations-request/).

Inclusion & Diversity

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.

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 via the online form found here: 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.

Article/ White Paper Report Form Template:

PLEASE LIMIT RESPONSES TO 2 PAGES DOUBLE SPACED PLUS SLIDES TO SHARE (Approx. 3 slides).

Date:

Reviewer Name:

Title, Author(s), and Date of Paper

- What was the purpose of this paper?
- What methods did the author use?
- What were the key results?
- What key issues does the author(s) cite in the discussion?
- How does this article contribute to today's discussion topic?

Case Study Report:

PLEASE LIMIT RESPONSES TO 3 PAGES DOUBLE SPACED PLUS SLIDES TO SHARE

Date:

 Name:

Title, Authors, and Date of Papers used to develop your case study. Please chose a min of three papers/reports to inform your case study:

- What was the purpose of this case study?
- What were the key results?
- Describe the methods/ approach you feel should be used in your case study.
- Did you find either exposomic or Geo Health concepts useful in your case study? Why?/ Why not?
- Make sure you identify how this case study might support your research