Course Syllabus

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ENV H 570 / EPI 570: Occupational and Environmental Epidemiology

Quarter: Spring 2024
Credits & Grading: 3 credits, graded
Time: Monday and Wednesday, 3:30 to 4:50 PM
Location: Health Sciences Education Building 427
Zoom Link: Include registration link for remote or hybrid courses

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Instructor(s) & Teaching Assistant(s):

INSTRUCTORS:

Joel Kaufman, Professor (he/him)

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Email: **joelk@uw.edu (mailto:joelk@uw.edu)**

Phone: 206-616-3501

Office Hours: By appointment

Joan Casey, Assistant Professor (she/her)

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Phone: 206-543-0408

Office Hours: By appointment

TEACHING ASSISTANT: Cara Smith (she/her)

Email: **cara15@uw.edu (mailto:cara15@uw.edu)**

Office Hours/Location: By appointment

Course Description

This course will focus on research approaches in environmental and occupational determinants of health and disease. It will feature a combination of didactics and discussion, lab exercises, and paper critiques, with main topics spanning climate change, outdoor air pollution, metals, environmental justice, the built environment, the energy transition, and occupational health. Cross-cutting themes include study design, confounding, selection, and information biases, exposure and risk assessment, geospatial methods, social determinants of health, the exposome, reproducibility, and science communication.
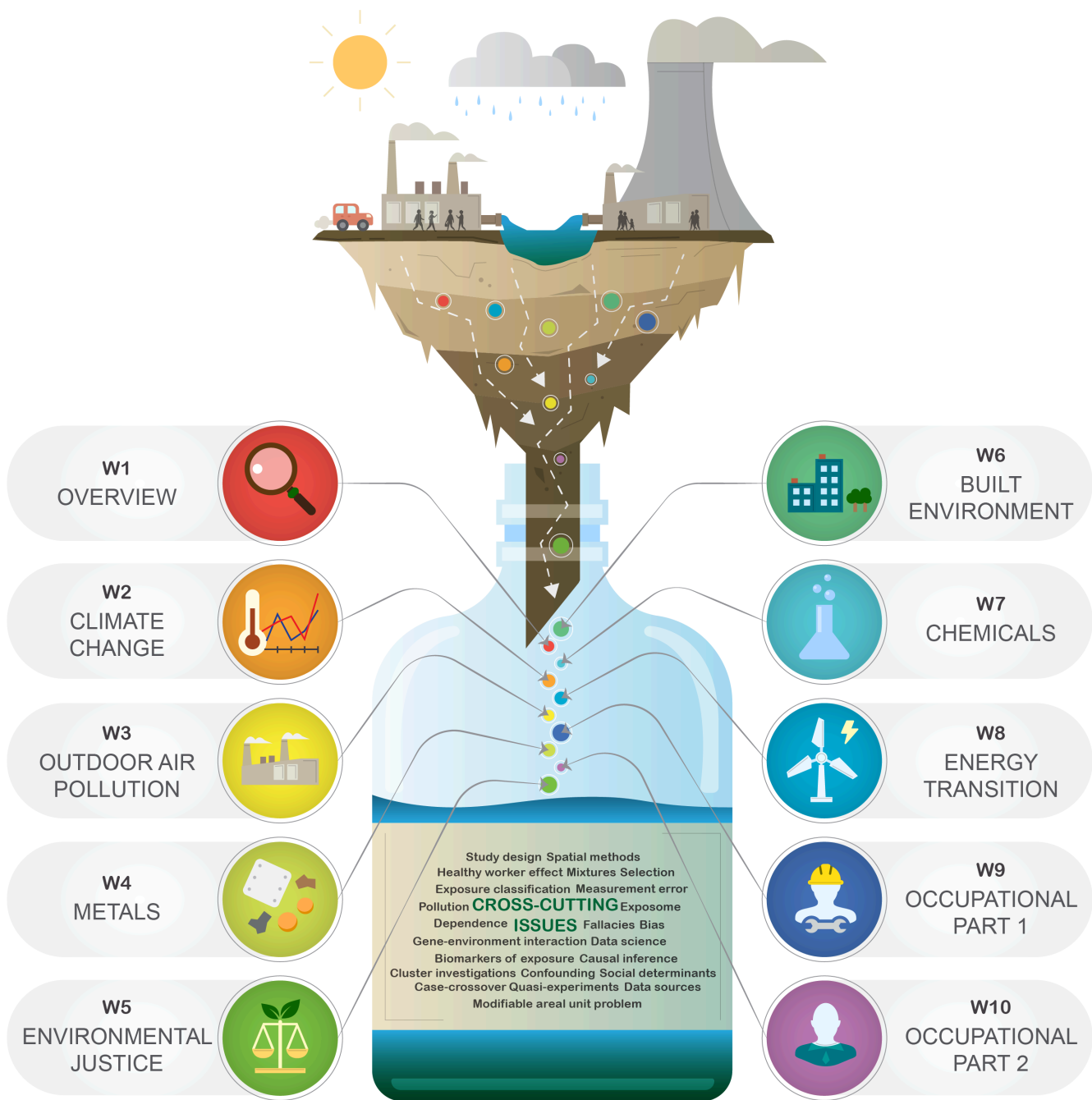
Course Structure

Each week will follow a similar structure.

Monday will begin with a review of the prior week and a discussion of the weekly quiz. Then, the instructors will provide a 1-hour lecture on the week's topic.

Wednesday will be interactive. Students will either take part in a paper discussion or a laboratory assignment in R Statistical Software.

The full schedule for the quarter can be found here: **Course Schedule (https://canvas.uw.edu/courses/1719086/pages/course-schedule?wrap=1)**

Environmental & Occupational Epidemiology

W1 OVERVIEW

W2 CLIMATE CHANGE

W3 OUTDOOR AIR POLLUTION

W4 METALS

W5 ENVIRONMENTAL JUSTICE

W6 BUILT ENVIRONMENT

W7 CHEMICALS

W8 ENERGY TRANSITION

W9 OCCUPATIONAL PART 1

W10 OCCUPATIONAL PART 2

Study design Spatial methods
Healthy worker effect Mixtures Selection
Exposure classification Measurement error
Pollution **CROSS-CUTTING** Exposome
Dependence **ISSUES** Fallacies Bias
Gene-environment interaction Data science
Biomarkers of exposure Causal inference
Cluster investigations Confounding Social determinants
Case-crossover Quasi-experiments Data sources
Modifiable areal unit problem

Course Learning Outcomes

Upon completion of this course, the student will be able to:

1. Understand key concepts in the design and interpretation of occupational and environmental epidemiology studies.

2. Describe biases that are frequently encountered in occupational or environmental epidemiologic research.

3. Understand the main methods to estimate exposure and risk relevant to occupational and environmental epidemiology studies.

4. Use spatial methods within R Statistical Software to complete descriptive and basic statistical analyses.

5. Understand the importance of and know how to incorporate social determinants of health into occupational and environmental epidemiologic research.

Accreditation Requirements & Degree Competencies Met by This Course

For courses that are listed as fulfilling degree competencies for our CEPH or EHAC accreditations, those competencies should be listed here. If you are unsure as to whether your course is "mapped" to one or more degree competency, please contact Jon Sharpe (**jsharpe@uw.edu (mailto:jsharpe@uw.edu)**).

Required Textbook and Readings

No required textbook.
Readings are available for download within each module.

Grading & Assessment

Based on the discussion during the first day of class, the different assignments will have the following contributions to the final grade:

Topics	Contribution to final grade (%)
Weekly quizzes (N=9, credit or no credit)	25
Labs (N = 5 weeks)	25
Paper discussion write-up (N = 1 week)	25
Participation	15
Final	10

Assessment types

Weekly quizzes: Students will complete an online quiz that will open after the class session on Wednesday and will be due by Sunday at 11:59PM the same week. The quiz will consist of 3-5 multiple choice or short answer questions, will be open-note, and will cover the material from that week's lecture/lab/discussion.

Labs: During five weeks, students will work in groups of 2-3 to complete labs. The expectation is that the majority of the assignment will be completed during class on Wednesday. The the turn-in product for each lab will be due by Sunday at 11:59PM via Canvas the same week and will consist of:

1. An abstract with the following sections:
   - Background: 1 sentence
   - Objective: 1 sentence
   - Methods: 2 sentences
   - Results: 2-3 sentences
   - Conclusion: 1 sentence
2. A figure produced in R along with an informative figure caption (3-5 sentences).
3. During 1 week, students will additionally turn in their R code for review.

Paper discussion: During 5 weeks, students will take part in discussions of assigned readings. Each student will participate, as part of a group of 4 other students, in leading at least one paper discussion over the course of the quarter. During the week when a student leads a paper discussion, they will also turn in a paper critique form. Each student will turn in their own form, but they may discuss the answers with the other students who led the discussion that week. The paper critique form will be due by Friday at 5PM the same week. Details for submitting the article critique can be found in the **Article Critique Assignment (https://canvas.uw.edu/courses/1719086/assignments/9118906?wrap=1)** .

Participation: Students are expected to actively participate in review of quizzes, in-class polls, lectures, class discussions, and laboratories.

Final: A final in-person exam will cover course materials and will include multiple choice and short answer questions and reading and response to a scientific article. The final exam is scheduled for Thursday, June 6th from 2:30-4:20.

Late Assignment Policy

Late assignments will be only accepted with prior discussion with course faculty.

Excused Absence from Class

Students are expected to attend class and to participate in all graded activities, including paper discussions, labs, and a final examination. A student who is anticipating being absent from class due to a Religious Accommodation activity needs to complete the Religious Accommodations request process by the second Friday of the quarter. Students who anticipate missing class due to attendance at academic conferences or field trips, or participation in university-sponsored activities should provide a written

notice to the instructor ahead of the absence. The instructor will determine if the graded activity or exam can be rescheduled or if there is equivalent work that can be done, as determined by the instructor.

To protect student privacy and the integrity of the academic experience, students will not be required to provide a medical excuse note to justify an absence from class due to illness. A student absent from any graded class activity or examination due to illness must request, in writing, to take a rescheduled examination or perform work judged by the instructor to be the equivalent.

Student Responsibilities

As an advanced graduate-level course, the expectation is that students are prepared and engaged during each class session. Readings assigned for each session should be reviewed prior to the class session. The quality of this course depends on this student engagement and participation in class discussions and laboratories.

Session-by-Session Schedule

All course materials and weekly assignments can be found in the **Modules (https://canvas.uw.edu/courses/1719086/modules)** page.

Use of AI for Class Assignments

We allow the use of AI in this class as it may serve you in your current and future career. However, please note that AI results can be biased and inaccurate. For example, ChatGPT will make up code that does not exist in R. It is your responsibility to ensure that the information you use from AI is accurate. Additionally, pay attention to the privacy of your data. Many AI tools will incorporate and use any content you share, so be careful not to unintentionally share copyrighted materials, original work, or personal information.

Respiratory Illness - Protocols and Safety (To be updated with Spring guidance)

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** ⬕ **(https://www.washington.edu/coronavirus/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 (https://wellbeing.uw.edu/flu-vaccination/)** .
3. Wear a high-quality mask in indoor public spaces and while traveling. High-quality masks help protect against a range of respiratory viruses, and are **available for free in locations on each UW**

campus ⤳ **(https://www.washington.edu/coronavirus/student-faq/#freemasks)** .

4. Take a coronavirus test if you have symptoms or have been exposed. Rapid antigen tests are widely available for free in **at campus locations listed here** ⤳ **(https://www.washington.edu/coronavirus/testing/)** . The **Husky Coronavirus Testing** ⤳ **(https://www.washington.edu/coronavirus/testing/hct/)** voluntary research study is also available for UW students.

5. **Activate WA Notify on your phone** ⤳ **(https://doh.wa.gov/emergencies/covid-19/wa-notify)** to receive exposure notifications and so that you can anonymously let others know of their exposure if you test positive.

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/)** **(https://registrar.washington.edu/staffandfaculty/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** ⤳ **(https://registrar.washington.edu/students/religious-accommodations-request/)** form **(https://registrar.washington.edu/students/religious-accommodations-request/** ⤳ **(https://registrar.washington.edu/students/religious-accommodations-request/)**).

Access & 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** ⤳ **(https://depts.washington.edu/uwdrs/)** .

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** **(https://www.washington.edu/studentconduct/)** (WAC 478-120). We expect you to know and follow the university's policies on cheating and plagiarism, and **the SPH Academic Integrity Policy** **(https://sph.washington.edu/students/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 website.

Land Acknowledgement

Washington state is home to 29 federally recognized and multiple unrecognized tribes. We acknowledge that we live and work on the unceded ancestral lands of the Coast Salish people, the land which touches the shared waters of all tribes and bands within the Duwamish, Puyallup, Suquamish, Tulalip and Muckleshoot nations, and pay our respects to elders past and present. We make this acknowledgment as one part of our commitment to working to create inclusive and respectful partnerships that honor Indigenous cultures, histories, identities, and sociopolitical realities, that dismantle ongoing legacies of settler colonialism, and that recognize the hundreds of Indigenous Nations who continue to resist, live, and uphold their sacred relations across their lands.

Equity, Diversity & Inclusion

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

- 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.
- 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.
- 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.

Pronouns

The University of Washington supports the expression of all gender identity, and provides frequently asked question on pronouns at the following link: **https://registrar.washington.edu/students/personal-data/pronouns/faqs/** **(https://registrar.washington.edu/students/personal-data/pronouns/faqs/)** . UW staff, faculty, and students can now also set their pronouns in the Identity.UW system to make them automatically available in Canvas and other UW systems (see **https://itconnect.uw.edu/guides-by-topic/identity-diversity-inclusion/identity/pronouns** **(https://itconnect.uw.edu/guides-by-topic/identity-diversity-inclusion/identity/pronouns)**).

We share our pronouns because we strive to cultivate an inclusive environment where people of all genders feel safe and respected. We invite everyone to share their pronouns. Professor Kaufman uses he/him/his pronouns and Professor Casey uses she/her/hers pronouns. Your TA, Cara Smith, uses she/her/hers pronouns.

Learning Environment

The Department of Environmental and Occupational Health Sciences (DEOHS) strives to create welcoming and respectful learning environments that promote access and opportunity for all students, regardless of their experiences, perspectives, identities, and abilities. The DEOHS, along with The UW School of Public Health, seek to ensure all students are fully included in each course. We strive to create an environment that reflects community and mutual caring. Students are encouraged to talk to instructors, advisors, members of the departmental or SPH Diversity Committee and/or program director with concerns about the classroom climate.

If you feel like this class is not living up to that commitment, there are several ways you can register your concern and seek resolution:

- If you feel comfortable doing so, begin by discussing your concern with the instructor and/or teaching assistant. Your instructor is expected to take your concerns seriously and work with you to identify a resolution.
- If you are not comfortable discussing the concern with the instructor, or you did so and the issue has still not been resolved, contact Trina Sterry, DEOHS Manager of Student and Academic Services (**tsterry@uw.edu (mailto:tsterry@uw.edu)**) to discuss your concern. She can also connect you to the appropriate member of DEOHS faculty leadership as needed.
- If you prefer to discuss your concern directly with someone from the School of Public Health (SPH) Dean's Office, you can review **the SPH Student Concern Policy** ⤷ **(https://sph.washington.edu/students/student-concern-policy)** and follow the procedures described there, including reaching out to the SPH Assistant Dean for Equity, Diversity and Inclusion, Dr. Victoria Gardner (**vg@uw.edu (mailto:vg@uw.edu)**). If you prefer to anonymously report your concern, you can email **dcinfo@uw.edu (mailto:dcinfo@uw.edu)** or use **the SPH Bias Incident Report Form** ⤷ **(https://sph.washington.edu/about/diversity/bias-concerns)** .
- If your concern is related to a bias incident, you can review **the UW's guidance on reporting bias incidents** ⤷ **(https://www.washington.edu/bias/)** , which includes a link to the UW Bias Reporting Tool.
- If you have experienced sex or gender discrimination, including sexual assault, relationship or intimate partner violence, stalking, sexual harassment, or other sexual misconduct, you have the right to make a formal complaint and request an investigation under Title IX. Information about Title IX reporting options is available at **https://www.washington.edu/titleix/report/** ⤷ **(https://www.washington.edu/titleix/report)** . The University also has other designated offices to help you avoid and/or report sexual harassment: SafeCampus (**https://www.washington.edu/safecampus/** ⤷ **(https://www.washington.edu/titleix/report)**); Office

of the Ombud (**https://www.washington.edu/ombud/** ⇨ **(https://www.washington.edu/ombud/)**); and University Complaint Investigation and Resolution Office (**https://www.washington.edu/uciro/** ⇨ **(https://www.washington.edu/uciro/)**).