**ENVH 453: Introduction to Industrial Hygiene**

Quarter: Fall 2024

Credits & Grading: 3 credits, graded

Time: Mondays, 8:30 am - 11:20 am

Location: HSEB 245

Class meets in person

**Instructor:**

Diana Ceballos, PhD, MS, CIH, Assistant Professor (she/her)  
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Office Hours: Fridays 9am. Email me that you will join Zoom. Zoom: <https://washington.zoom.us/j/94926108185>

Note: If office hours do not work out for a particular student, then you can make an appointment, by contacting Ms. Stella Christoforou at [stellac8@uw.edu](mailto:stellac8@uw.edu) to set up a 15min zoom appointment.

**Course Description**

This course provides an introduction to the principles and practice of occupational hygiene for students. Occupational hygiene is concerned with the Anticipation, Recognition, Evaluation and Control of workplace hazards as it relates to health and safety. These functions all require an understanding of industrial toxicology, methods of exposure measurement, behavior of chemical and physical agents in the environment, the application of guidelines and standards, and technical and administrative approaches to controlling risks from these exposures.

**Course Learning Outcomes**

At the end of the ENVH 453 Industrial Hygiene course, students will be able to:

1. Recognize potential health hazards in the workplace.

3. Recommend suitable strategies for controlling hazardous conditions.

4. Describe the elements required for an effective workplace occupational health program.

5. Describe the nature of the health effects associated with exposure to industrial agents.

6. Explain the standard methods for measuring and evaluating worker exposure to chemical and physical agents and identify strengths and weaknesses to typical approaches.

7. Apply and interpret health and safety standards and regulations for the workplace environment.

8. Apply feasible approaches to controlling worker exposure to health and safety hazards to a specific industrial setting.

9. Describe how the social and economic context of work affects workers’ and employers’ ability to control threats to health and safety.

# \*\*\*Everything in this syllabus is subject to change including readings and assignments\*\*\*

**Required and Suggested Textbook and Readings**

The required textbook for this course, *The NIOSH Pocket Guide to Chemical Hazards,* can be accessed free of charge as a NIOSH app. Free online apps (Please do not pay for these apps):

* NIOSH apps at: <https://www.cdc.gov/niosh/pubs/apps/default.html>
* The NIOSH Pocket Guide to Chemical Hazards app at: <https://www.cdc.gov/niosh/npg/mobilepocketguide.html>
* OSHA Industrial Hygiene manual at: <https://www.osha.gov/sites/default/files/training-library_industrial_hygiene.pdf>

Additional readings for case studies may be provided as pdfs on course website. Other materials will be available on Canvas, at the library, or in class, including the videos as background references.

Suggested General References (These may be available for use in the SPH Library or in Field Research Group Library):

* ACGIH TLV Booklets (also provided during class when needed).
* Morgan, M.S., Horstman, S.W. Introduction to Occupational Hygiene. 2013.
* American Conference of Governmental Industrial Hygienists. Documentation of the Threshold Limit Values.
* Anna DH, ed. The Occupational Environment - Its Evaluation, Control and Management. Third Edition. Fairfax, VA: American Industrial Hygiene Association, 2010.
* Dinardi SR. Calculation Methods for Industrial Hygiene. New York: Van Nostrand Reinhold, 1995.
* Finkel AJ. Hamilton and Hardy's Industrial Toxicology. 4th Ed. Littleton, MA: PSG Publishing Co. 1983.
* Finucane EW. Definition, Conversions, and Calculations for Occupational Safety and Health Professionals. Boca Raton, FL: Lewis Publishers, 1993.
* Perkins JL. Modern Industrial Hygiene. Volume I. Recognition and Evaluation of Chemical Agents. New York: Van Nostrand Reinhold, 1997.
* Berger EH, et al, eds. The Noise Manual. 5th edition. Fairfax, VA: American Industrial Hygiene Association, 2000.
* Plog, B.A., ed., Fundamentals of Industrial Hygiene, 4th Ed. National Safety Council, Chicago, IL, 1996.
* Popendorf WS. Industrial Hygiene Control of Chemical Hazards. Boca Raton, FL: CRC Press, 2006.

**Assessment & Grading**

Detailed information about each of the assignment components, expectations, and grading criteria (rubric, if any) will be included on the Canvas site. Overall, your grade will consist of your homework on progress towards your final project (A-J), and final project (K and L). Always submit your assignments via the Canvas site and name the files on your assignments with easily identifiable information, ideally at a minimum, denoting the assignment letter and your name. For example: "Assignment\_B\_Diana\_Ceballos."

Weekly Homework (A-M): There will be a total of 11 homework assignments plus the final project. Assignments A - J are worth 320 points total throughout the quarter (29.1 each). Final project, Assignments L & M, is worth 80 points on the last day of class.

Group Final Project will have two parts (total of 80 points):

1. Written Final Wiki Project (L): The written portion of the wiki page (I) will be worth 40 points.

The final text you upload to the Wikipedia page must be written in your own words (every single phrase). AI tools like chat gpt can be used as a source in your research journey but not the only one, just like Google, books, or the library. Ultimately, it's plagiarism if you copy-paste from any source including AI generated text. This means that your writing has to be in your own words and should pass plagiarism or AI generated text checks.

1. Oral Final Presentation (M): There will be a final project presentation (J) about 10-minutes long (or longer) at the end of the quarter worth 40 points, including a 5-min background Industrial Hygiene topic presentation worth 20 points plus a 5-min presentation of the wiki page added content worth 20 points. Each student must present part of the group presentation.

**Late Assignment Policy**

## Late-work policy: It is the student solely responsibility to make sure that the assignment was successfully submitted on canvas on time. Late assignments will be docked 20% of their value per day and will not be accepted after 5 days past the deadline. Students would need to request in writing any accommodation for late turning in of homework in advance of the due date, if possible. Exceptions will be rare and only granted under extreme extenuating or justifiable circumstances.

## Canvas Submissions: All assignments should be submitted via the Assignments tool on the Canvas site by midnight of the due date (day of class, unless otherwise specified), with clear labeling including individual name, date, and assignment name, number, or type.

**Session-by-Session ENVH 453 Fall 2023 Schedule**

|  |  |  |  |
| --- | --- | --- | --- |
| **Class** | **Monday**  **Dates** | **Activity: Topics** | **Assignment\*** |
| 1 | 9/30 | **Lecture DC:** Intro to the course: syllabus & final project  **Lecture DC:** Intro to industrial hygiene concepts and resources within the context of public health and health equity  **Lecture TM (CDC):** Intro to Wikipedia & occupational health | Read syllabus &  final project handout |
| 2 | 10/7 | **Lecture DC:** Intro to hazards in the workplace  **Group activity DC:** Dirty jobs exercise  **Group activity DC:** Brainstorming topics for wiki project | **A**-Open wiki account (indiv)  **B**-Suggest 3 potential wiki topics & group (indiv) |
| 3 | 10/14 | **Lecture TM (CDC):** Choosing topics in Wikipedia  **Group activity DC:** Selecting topics for wiki project  **Students’ presentations:** Present 1-min group pitch for wiki project  **Lecture DC:** Principles of air contaminants | **C**-In-class 1-min pitch/outline for wiki project to class after class group discussion (group).  **D**-Submit in writing topic and outline for wiki project (indiv). |
| 4 | 10/21 | **Lecture MC:** Getting to know the work environment – walkthrough surveys  **Case Study or Group Activity MC:** Identifying hazards from a walkthrough (3D tour)  **Lecture MC:** Show and tell with sampling equipment | **E**-Topic assigned on wiki edu dashboard (indiv).  **F**-First draft lit review with 4 key references for wiki project (indiv) |
| 5 | 10/28 | **Lecture RG:** Guidelines and Regulations: WISHA & OSHA  **Group activity DC**: NIOSH Pocket guide to chemical hazards App exercise  **Group activity DC:** Discuss wiki progress & IH Q&A in groups | **G**-In-class answering IH Q&A on your topic after class group discussion (group)  **F—**Second draft lit review \*\*optional\*\*. |
| 6 | 11/4 | **Discussion DC:** Discuss progress course (assign, eval, time final)  **Lecture DC:** Introduction to exposure limits and the hierarchy of controls  **Lecture DC:** Intro to exposure assessment  **Case Study DC:** Lead environmental and biological monitoring | **H**-First draft group wiki project write up (group) |
|  | 11/11 | \*No class on Monday, November 11th – Veteran's Day\* |  |
| 7 | 11/18 | **Lecture MC:** Introduction to controlling airborne contaminants: ventilation  **Case Study or Group Activity MC:** Choosing workplace controls  **Lecture TM (CDC):** Introduction to noise hazards and controls & follow up Wiki project | **I**-Have entered some content in wiki successfully (group). **J**-Training completed (indiv)  **H—**Second draft wiki write up \*\*optional\*\* |
| 8 | 11/25 | **Lecture MF (CDC):** Intro to occupational health equity  **Group activity DC:** Questions about wiki project?  **Lecture DC/KF:** Introduction to safer chemicals  **Case Study DC:** Popcorn lung disease | **K**-Have entered a paragraph in wiki successfully (group) |
| 9 | 12/2 | Wiki final presentations & course evaluation | **L**-Wiki page ready & published for class viewing (group)  **M**-Wiki presentations (group) |
| No final exam or class on the finals exam week, December 7-13 | | | |

# \*Assignments are due midnight after class unless specified (e.g., in class presentations). Please bring homework progress to class in case there are any questions or discussion related to the homework. \*\*Only available to those with a first submission to get more feedback from the instructor.

**Excused Absence from Class**

Students are expected to attend class and to participate in all graded activities, including in-class mid-quarter presentations and final presentations. The course is highly interactive, with frequent discussions and group activities during most class sessions. With a small class where students are responsible for presenting or otherwise participating in many class sessions, it is extremely important to attend all classes well prepared, or to notify the instructor if you have an extenuating circumstance that precludes joining a specific class session.

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.

**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/) (<https://registrar.washington.edu/students/religious-accommodations-request/>).

**Respiratory Illness - Protocols and Safety**   
Fall and winter 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. All classes will be recorded and saved on canvas (for class purposes only).

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. 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](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.

**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.

**Writing Skills**

Effective communication through writing is an important transferable skill for all career pathways. Establishing a strong foundation in writing skills will help you be successful throughout your future course work and career. This course includes written assignments with the goal of helping you get feedback on and improve your writing skills. If, however, you feel that you could benefit from additional resources to improve you writing skills, a list of UW and other online resources can be found on the SPH website (<https://sph.washington.edu/sites/default/files/inline-files/Writing-Resources-4.3.19.pdf>) and on the DEOHS intranet (<https://portal.deohs.washington.edu/index.php/academic-support-writing-resources> - accessible only to DEOHS students).

**Land Acknowledgement**

Washington state is home to 29 federally recognized and multiple unrecognized tribes. We include a land acknowledgment statement as a sign of respect for the original caretakers of the land: “*We acknowledge 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*."

**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/>. 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>).

**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. 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](mailto: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/>. The University also has other designated offices to help you avoid and/or report sexual harassment: SafeCampus (<https://www.washington.edu/safecampus/>); Office of the Ombud (<https://www.washington.edu/ombud/>); and University Complaint Investigation and Resolution Office (<https://www.washington.edu/uciro/>).