

# ENV H 453 A Au 21: Industrial Hygiene

[Jump to Today](#)

 [Edit](#)

## ENVH 453: Introduction to Industrial Hygiene

**3 credits, graded**

**Rick Gleason, MSPH, CIH, CSP**

**Quarter:** Autumn 2021

**Time:** Tuesdays, 8:30 am - 11:20 am

**Location:** HSB BB 1404

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### Instructor:



**Rick Gleason**, Associate Teaching Professor

**Office:** 4225 Roosevelt Way NE

**Phone:** 206-856-6660

**Email:** [rgleason@uw.edu](mailto:rgleason@uw.edu)

[.mailto:rgleason@uw.edu](mailto:rgleason@uw.edu) **Office Hours:** By 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 work place hazards 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.

Meeting in person and by ZOOM:

Richard Gleason is inviting you to a scheduled Zoom meeting if you cannot make the in-person class at BB1404 (Near the UW Hospital)

Topic: ENVH 453

Time: Oct 5, 2021 08:30 AM Pacific Time (US and Canada)

Every week on Tue, 10 occurrence(s)

Oct 5, 2020 08:30 AM  
Oct 12, 2020 08:30 AM  
Oct 19, 2020 08:30 AM  
Oct 26, 2020 08:30 AM  
Nov 2, 2020 08:30 AM  
Nov 9, 2020 08:30 AM  
Nov 16, 2020 08:30 AM  
Nov 23, 2020 08:30 AM  
Nov. 30, 2020 08:30 AM  
Dec 7, 2020 08:30 AM

Join Zoom Meeting

<https://washington.zoom.us/j/94297352795> (<https://washington.zoom.us/j/94297352795>)

## Course Goals

Overall Objective: to provide an introduction to the principles and practice of occupational hygiene for students not majoring in this subject area. Occupational hygiene is concerned with the *Anticipation, Recognition, Evaluation and Control* of work-place hazards to health and safety. These functions all require a sound 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, topics that form the basic elements of the course.

## Course Objectives

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

1. Recognize potential health hazards in the workplace;
2. Perform basic health hazard evaluations using **OSHA** sampling procedures.
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 work-place 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.

## Exams, Assignments and Grading

There will be one homework assignment each week worth 25 points each x 9 weeks = **225 points**

There will be a 10 minute Industrial Hygiene Presentation worth **75 points**. Each student will prepare 3 questions for the class that will be handed in by the attendees.

The in-class homework from the student presentations and quizzes will be worth **100 points as a final exam**.

The total points for the course will be **400 points**

**Course Textbook:** The NIOSH Pocket Guide to Chemical Hazards will be provided free of charge electronically the first course day October 6, 2020. All other material will be provided on Canvas, including the videos to review. Readings for each week are included in the Files section in Canvas.

**Classroom Climate:** The UW School of Public Health seeks to ensure all students are fully included in each course. We strive to create an environment that reflects community and mutual caring. We encourage students with concerns about classroom climate to talk to your instructor, your advisor, a member of the departmental or SPH Diversity Committee and/or the program director. [vg@uw.edu](mailto:vg@uw.edu) (<mailto:vg@uw.edu>) is a resource for students with classroom climate concerns.

## Access and Accommodations

Your experience in this class is important to me. If you have already established accommodations with Disability Resources for Students (DRS), please communicate your approved accommodations to me at your earliest convenience so we can discuss your needs 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 are not limited to mental health, attention-related, learning, vision, hearing, physical or health impacts), you are welcome to contact DRS at 206-543-8924 or [uwdrs@uw.edu](mailto:uwdrs@uw.edu) (<mailto:uwdrs@uw.edu>) or [disability.uw.edu](http://depts.washington.edu/uwdrs/) (<http://depts.washington.edu/uwdrs/>). DRS offers resources and coordinates reasonable accommodations for students with disabilities and/or temporary health conditions. Reasonable accommodations are established through an interactive process between you, your instructor(s) and DRS. It is the policy and practice of the University of Washington to create inclusive and accessible learning environments consistent with federal and state law.

## 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/>). 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/>).

## 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.

## Safety

Call SafeCampus at 206-685-7233 anytime – no matter where you work or study – to anonymously discuss safety and well-being concerns for yourself or others. SafeCampus's team of caring professionals will provide individualized support, while discussing short- and long-term solutions and connecting you with additional resources when requested.

A brief summary of the subjects by week are as follows:

October 6, 2020 Week 1 History of Industrial Hygiene and Organizations OSHA, WA State OSHA, NIOSH, ACGIH

October 13, 2020 Week 2 Sampling for Dusts, Particulates and Fumes. IH Sampling Reports. Student Presentations Respirable Crystalline Silica, Asbestos, Beryllium, Lead

October 20, 2020 Week 3 Sampling for Gasses and Vapors Student Presentations Benzene, Vinyl Chloride, Methylene Chloride, Acrylonitrile, Chlorine

October 27, 2020 Week 4 Direct Reading Instruments and Real Time Air Monitoring. Student Presentations Confined Space, Carbon Monoxide, Hydrogen Sulfide, Combustible Gas, Oxygen

November 3, 2020 Week 5 Toxicology, Carcinogens Student Presentations Arsenic, Cadmium, Hexavalent Chromium, Formaldehyde, Ethylene Oxide, Glove Chemical Resistance, PPE

November 10, 2020 Week 6. Isocyanates, Ammonia, Indoor Air Quality, Sick Building Syndrome, Respiratory Protection. Student Presentation Dust Masks (Disposable Dust Filtering Facepieces), Half Mask Respirators, SCBA's,

November 17, 2020 Week 7 Noise Sampling and Hearing Conservation. Confined Spaces and Sampling. Student Presentations Hearing Conservation Program, Types of Hearing Protection, Audiometric Testing, Confined Spaces.

November 24, 2020 Week 8 Ventilation and Engineering Controls Specific Student Presentations Welding Ventilation, Ergonomics, Chemical Hazard Communication, -Global Harmonization-Worker Right to Know

November 26, 2019 Week 9 Radiation, Heat Stress and Lighting and IH Programs. Student Presentations Ionizing Radiation, Non-Ionizing Radiation, Heat Stress, Lighting

December 1, 2020 Week 10 Take Home Final and Course Wrap Up (Assignment 10 and final due by Dec. 8, 2019. Special IH Hazards, Organic Peroxides, PSM

## ENVH 453 Industrial Hygiene

### Presentation topics

Oct. 12, 2021

Respirable Crystalline Silica Noufa Khan

Asbestos Mae Riley

Beryllium Djanaya Esiong

Lead Sydney Steele

Oct. 19, 2021

Benzene Emma Walther

Vinyl Chloride

Methylene Chloride Lyan Lopez

Acrylonitrile

Chlorine Yoojin Kang

Oct. 26, 2021

Confined Space- Linda Chen

Carbon Monoxide- Christina Conde

Hydrogen Sulfide- Wendy He

Combustible Gas

November 2, 2021

Formaldehyde- Thomas Kurtz

Hexavalent Chromium Amanda David

Ethylene Oxide Alpha Sall

Wildland Fire Smoke-- Natalie Rejto

Nov. 9, 2021

Isocyanates

Ammonia Lucy Artman

Indoor Air Quality / Sick Building Syndrome- Yingyu Lu

Respiratory Protection- Kusha Xiao

Nov. 16, 2021

Hearing Conservation Program- Inna Antonchuk

Types of Hearing Protection- Helen Xu

Audiometric Testing-

Heat Stress Outdoor Heat Related Illness Javier Silva

Nov. 23, 2021

Welding Renee Reich

Ventilation

Ergonomics Kate Blanchard

Chemical Hazard Communication Emily Ritchie



Nov. 30, 2021




Ionizing Radiation

Non-Ionizing Radiation

Lighting

## Course Summary:

Date	Details	Due
Tue Oct 12, 2021	 <a href="https://canvas.uw.edu/courses/1478667/assignments/6402713">Assignment 1</a> <a href="https://canvas.uw.edu/courses/1478667/assignments/6402713">https://canvas.uw.edu/courses/1478667/assignments/6402713</a>	due by 8:30am
Tue Oct 19, 2021	 <a href="https://canvas.uw.edu/courses/1478667/assignments/6402715">Assignment 2</a> <a href="https://canvas.uw.edu/courses/1478667/assignments/6402715">https://canvas.uw.edu/courses/1478667/assignments/6402715</a>	due by 8:30am
Tue Oct 26, 2021	 <a href="https://canvas.uw.edu/courses/1478667/assignments/6402716">Assignment 3</a> <a href="https://canvas.uw.edu/courses/1478667/assignments/6402716">https://canvas.uw.edu/courses/1478667/assignments/6402716</a>	due by 8:30am
Tue Nov 2, 2021	 <a href="https://canvas.uw.edu/courses/1478667/assignments/6402717">Assignment 4</a> <a href="https://canvas.uw.edu/courses/1478667/assignments/6402717">https://canvas.uw.edu/courses/1478667/assignments/6402717</a>	due by 8:30am
Tue Nov 9, 2021	 <a href="https://canvas.uw.edu/courses/1478667/assignments/6402718">Assignment 5</a> <a href="https://canvas.uw.edu/courses/1478667/assignments/6402718">https://canvas.uw.edu/courses/1478667/assignments/6402718</a>	due by 8:30am
Tue Nov 16, 2021	 <a href="https://canvas.uw.edu/courses/1478667/assignments/6402719">Assignment 6</a> <a href="https://canvas.uw.edu/courses/1478667/assignments/6402719">https://canvas.uw.edu/courses/1478667/assignments/6402719</a>	due by 8:30am
Tue Nov 23, 2021	 <a href="https://canvas.uw.edu/courses/1478667/assignments/6402720">Assignment 7</a> <a href="https://canvas.uw.edu/courses/1478667/assignments/6402720">https://canvas.uw.edu/courses/1478667/assignments/6402720</a>	due by 8:30am
Tue Nov 30, 2021	 <a href="https://canvas.uw.edu/courses/1478667/assignments/6402721">Assignment 8</a> <a href="https://canvas.uw.edu/courses/1478667/assignments/6402721">https://canvas.uw.edu/courses/1478667/assignments/6402721</a>	due by 8:30am

Date	Details	Due
Tue Dec 7, 2021	 <a href="https://canvas.uw.edu/courses/1478667/assignments/6402722">Assignment 9</a> ( <a href="https://canvas.uw.edu/courses/1478667/assignments/6402722">https://canvas.uw.edu/courses/1478667/assignments/6402722</a> )	due by 10:30am
Tue Dec 14, 2021	 <a href="https://canvas.uw.edu/courses/1478667/assignments/6402714">Assignment 10-Final Take Home Test</a> ( <a href="https://canvas.uw.edu/courses/1478667/assignments/6402714">https://canvas.uw.edu/courses/1478667/assignments/6402714</a> )	due by 10:30am
	 <a href="https://canvas.uw.edu/courses/1478667/assignments/6402723">Roll Call Attendance</a> ( <a href="https://canvas.uw.edu/courses/1478667/assignments/6402723">https://canvas.uw.edu/courses/1478667/assignments/6402723</a> )	