

ENV H 453 A Au 19: Industrial Hygiene

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ENVH 453: Introduction to Industrial Hygiene

3 credits, graded

Rick Gleason, MSPH, CIH, CSP

Quarter: Autumn 2019

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

Location: I-132

Instructor:



Rick Gleason, Senior Lecturer

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<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.

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 15 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**.

There will be a final exam (take home) that will be worth **100 points**.

The total points for the course will be **500 points**

Course Textbook: The NIOSH Pocket Guide to Chemical Hazards will be provided free of charge the first course day October 1, 2019. 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/>) (<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/>) (<https://registrar.washington.edu/students/religious-accommodations-request/>).

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 1, 2019 Week 1 History of Industrial Hygiene and Organizations OSHA, WA State OSHA, NIOSH, ACGIH

October 8, 2019 Week 2 Sampling for Dusts, Particulates and Fumes. IH Sampling Reports. Student Presentations Respirable Crystalline Silica, Asbestos, Beryllium, Lead

October 15, 2019 Week 3 Sampling for Gasses and Vapors Student Presentations Benzene, Vinyl Chloride, Methylene Chloride, Acrylonitrile, Chlorine

October 22, 2019 Week 4 Direct Reading Instruments and Real Time Air Monitoring. Student Presentations Confined Space, Carbon Monoxide, Hydrogen Sulfide, Combustible Gas, Oxygen

October 29, 2019 Week 5 Toxicology, Carcinogens Student Presentations Arsenic, Cadmium, Hexavalent Chromium, Formaldehyde, Ethylene Oxide, Glove Chemical Resistance, PPE

November 5, 2019 Week 6. Isocyanates, Indoor Air Quality, Sick Building Syndrome, Respiratory Protection. Student Presentation Dust Masks (Disposable Dust Filtering Facepieces), Half Mask Respirators, SCBA's,

November 12, 2019 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 19, 2019 Week 8 Ventilation and Engineering Controls Specific Student Presentations Welding Ventilation, Ergonomics, Chemical Hazard Communication,-Global Harmonization-Worker Right to Know, Ammonia

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

December 3, 2019 Week 10 Take Home Final and Course Wrap Up (Assignment 10 and final due by Dec. 10, 2019. Special IH Hazards, Organic Peroxides, PSM

Course Summary:

Date	Details	
Tue Oct 8, 2019	 Assignment 1 https://canvas.uw.edu/courses/1320272/assignments/4865152	due by 10:30am
Tue Oct 15, 2019	 Assignment 2 https://canvas.uw.edu/courses/1320272/assignments/4865241	due by 10:30am
Tue Oct 22, 2019	 Assignment 3 https://canvas.uw.edu/courses/1320272/assignments/4865244	due by 10:30am
Tue Oct 29, 2019	 Assignment 4 https://canvas.uw.edu/courses/1320272/assignments/4865269	due by 10:30am
Tue Nov 5, 2019	 Assignment 5 https://canvas.uw.edu/courses/1320272/assignments/4865270	due by 10:30am
Tue Nov 12, 2019	 Assignment 6 https://canvas.uw.edu/courses/1320272/assignments/4865271	due by 10:30am
Tue Nov 19, 2019	 Assignment 7 https://canvas.uw.edu/courses/1320272/assignments/4865272	due by 10:30am
Tue Nov 26, 2019	 Assignment 8 https://canvas.uw.edu/courses/1320272/assignments/4865273	due by 10:30am
Tue Dec 3, 2019	 Assignment 9 https://canvas.uw.edu/courses/1320272/assignments/4865275	due by 10:30am
Tue Dec 10, 2019	 Assignment 10-Final Take Home Test https://canvas.uw.edu/courses/1320272/assignments/4865327	due by 10:30am