

# ENV H 431 A: Environmental And Occupational Sampling And Analysis I

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ENVIRONMENTAL & OCCUPATIONAL HEALTH SCIENCES  
SCHOOL OF PUBLIC HEALTH · UNIVERSITY of WASHINGTON

## ENV H 431 A: Environmental & Occupational Sampling+Analysis - Autumn 2016

**3 credits, graded, SLN 14577**

### Instructor:

**Christopher D Simpson, Professor & Program Director**

DEOHS

Health Sciences Building F-225

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Office hours by appointment

**Teaching Assistant:** Emily Zamzow (ezamzow@uw.edu, office hours: 12:30-1:30 on Mondays and 3:00-4:00 on Wednesdays, Health Science Library 3rd Floor)

**Time:** Mondays + Wednesdays at 1:30p - 2:50p

**Location:** Health Sciences Building K-069 (K-wing)

**NOTE:** Field trips to local sites will extend beyond normal class hours on three Wednesdays.

### Course Description

This course introduces students to the basic principles of environmental sampling and analysis to prevent or reduce public health hazards. This is the first course in a three-course series. We will examine sampling and analytical methods used to measure contaminants in the workplace and in community environments. Topics include regulatory mandates, sampling design, sampling strategies, exposure pathways and routes, quality assurance procedures applied to air, water and soil samples. The course will be of use to environmental scientists and engineers, public health professionals, and others interested in the field of environmental health sciences.

### Learning Objectives:

At the end of this course, students will be able to...

- Define the basic principles of environmental sampling and analysis
- Explain the primary laws and regulations that mandate environmental sampling and analysis
- Outline a sampling program appropriate for a particular environmental health concern
- Evaluate the quality assurance and quality control aspects of a sampling program
- Conduct basic calculations needed for planning a sampling program
- Demonstrate specific knowledge related to air, water and soil sampling principles and techniques
- Apply critical thinking to current issues in environmental sampling

**Course Format:** Classes will be a combination of lecture, field visits, and discussion.

**NOTE:** Field trips to local sites will extend beyond normal class hours on three Wednesdays. These trips are tentatively scheduled for Oct 19, Nov 2 and Nov 30, though dates may change dependent upon availability of the hosting laboratories. Students are required to attend at least two of the field trips to pass the course; attendance at all 3 field trips is needed to achieve a perfect grade in this course.

**Readings:** Readings for each course session will be posted on the course website as pdf documents.

### Assignments and Examinations

- 10% participation
- 30% homework problem sets and written assignments
- 25% mid-term examination
- 35% final examination

**Academic Integrity** (<http://sph.washington.edu/students/academicintegrity/>)  
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Students at the University of Washington (UW) are expected to maintain the highest standards of academic conduct, professional honesty, and personal integrity.














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### Access and Accommodation

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 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://disability.uw.edu) (<http://disability.uw.edu>). 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.

## Assignments Summary:

Date	Details	
Wed Sep 28, 2016	 <a href="https://canvas.uw.edu/calendar?event_id=922047&amp;include_contexts=course_1065258">ENVH431A - Introduction to Environmental Sampling &amp; Analysis</a> <a href="https://canvas.uw.edu/calendar?event_id=922047&amp;include_contexts=course_1065258">https://canvas.uw.edu/calendar?event_id=922047&amp;include_contexts=course_1065258</a>	1:30pm to 2:50pm
Mon Oct 3, 2016	 <a href="https://canvas.uw.edu/calendar?event_id=922046&amp;include_contexts=course_1065258">ENVH431A - Air Contaminants: Aerosols</a> ( <a href="https://canvas.uw.edu/calendar?event_id=922046&amp;include_contexts=course_1065258">https://canvas.uw.edu/calendar?event_id=922046&amp;include_contexts=course_1065258</a> )	1:30pm to 2:50pm
Wed Oct 5, 2016	 <a href="https://canvas.uw.edu/calendar?event_id=922045&amp;include_contexts=course_1065258">ENVH431A - Air Contaminants: Gases and Vapors</a> <a href="https://canvas.uw.edu/calendar?event_id=922045&amp;include_contexts=course_1065258">https://canvas.uw.edu/calendar?event_id=922045&amp;include_contexts=course_1065258</a>	1:30pm to 2:50pm
Mon Oct 10, 2016	 <a href="https://canvas.uw.edu/calendar?event_id=922039&amp;include_contexts=course_1065258">ENVH 431A - Valdez health Study</a> ( <a href="https://canvas.uw.edu/calendar?event_id=922039&amp;include_contexts=course_1065258">https://canvas.uw.edu/calendar?event_id=922039&amp;include_contexts=course_1065258</a> )	1:30pm to 2:50pm
	 <a href="https://canvas.uw.edu/courses/1065258/assignments/3361307">Homework #1 - particles</a> <a href="https://canvas.uw.edu/courses/1065258/assignments/3361307">https://canvas.uw.edu/courses/1065258/assignments/3361307</a>	due by 11:59pm
Wed Oct 12, 2016	 <a href="https://canvas.uw.edu/calendar?event_id=922041&amp;include_contexts=course_1065258">ENVH431A - Air Quality Regulations</a> ( <a href="https://canvas.uw.edu/calendar?event_id=922041&amp;include_contexts=course_1065258">https://canvas.uw.edu/calendar?event_id=922041&amp;include_contexts=course_1065258</a> )	1:30pm to 2:50pm
Mon Oct 17, 2016	 <a href="https://canvas.uw.edu/calendar?event_id=926314&amp;include_contexts=course_1065258">ENV H 431 A: residential woodsmoke case study</a> ( <a href="https://canvas.uw.edu/calendar?event_id=926314&amp;include_contexts=course_1065258">https://canvas.uw.edu/calendar?event_id=926314&amp;include_contexts=course_1065258</a> )	1:30pm to 2:50pm
	 <a href="https://canvas.uw.edu/courses/1065258/assignments/3361308">Homework # 2 - Gases &amp; Vapors</a> <a href="https://canvas.uw.edu/courses/1065258/assignments/3361308">https://canvas.uw.edu/courses/1065258/assignments/3361308</a>	due by 11:59pm
Wed Oct 19, 2016	 <a href="https://canvas.uw.edu/calendar?event_id=922048&amp;include_contexts=course_1065258">ENVH431A - Field Trip #1: Beacon Hill</a> ( <a href="https://canvas.uw.edu/calendar?event_id=922048&amp;include_contexts=course_1065258">https://canvas.uw.edu/calendar?event_id=922048&amp;include_contexts=course_1065258</a> )	1:30pm to 2:50pm
Mon Oct 24, 2016	 <a href="https://canvas.uw.edu/calendar?event_id=922036&amp;include_contexts=course_1065258">ENVH431A - Contaminants in Water I</a> ( <a href="https://canvas.uw.edu/calendar?event_id=922036&amp;include_contexts=course_1065258">https://canvas.uw.edu/calendar?event_id=922036&amp;include_contexts=course_1065258</a> )	1:30pm to 2:50pm
Wed Oct 26, 2016	 <a href="https://canvas.uw.edu/calendar?event_id=922040&amp;include_contexts=course_1065258">ENVH431A - Contaminants in Water II</a> ( <a href="https://canvas.uw.edu/calendar?event_id=922040&amp;include_contexts=course_1065258">https://canvas.uw.edu/calendar?event_id=922040&amp;include_contexts=course_1065258</a> )	1:30pm to 2:50pm
Mon Oct 31, 2016	 <a href="https://canvas.uw.edu/calendar?event_id=922044&amp;include_contexts=course_1065258">ENVH 431A - Review session</a> ( <a href="https://canvas.uw.edu/calendar?event_id=922044&amp;include_contexts=course_1065258">https://canvas.uw.edu/calendar?event_id=922044&amp;include_contexts=course_1065258</a> )	1:30am to 2:50am
	 <a href="https://canvas.uw.edu/courses/1065258/assignments/3383045">Home work #3: Contaminants in water</a> <a href="https://canvas.uw.edu/courses/1065258/assignments/3383045">https://canvas.uw.edu/courses/1065258/assignments/3383045</a>	due by 11:59pm

Date	Details	
Wed Nov 2, 2016	 <a href="https://canvas.uw.edu/calendar?event_id=922043&amp;include_contexts=course_1065258">ENVH431A - Field Trip #2: SPU Lab (https://canvas.uw.edu/calendar?event_id=922043&amp;include_contexts=course_1065258)</a>	1:30pm to 2:50pm
Mon Nov 7, 2016	 <a href="https://canvas.uw.edu/calendar?event_id=922050&amp;include_contexts=course_1065258">ENVH431A - MID-TERM EXAM (https://canvas.uw.edu/calendar?event_id=922050&amp;include_contexts=course_1065258)</a>	1:30pm to 2:50pm
	 <a href="https://canvas.uw.edu/courses/1065258/assignments/3361311">Midterm (https://canvas.uw.edu/courses/1065258/assignments/3361311)</a>	due by 1:30pm
Wed Nov 9, 2016	 <a href="https://canvas.uw.edu/calendar?event_id=922042&amp;include_contexts=course_1065258">ENVH431A - Biological Monitoring of Exposure (https://canvas.uw.edu/calendar?event_id=922042&amp;include_contexts=course_1065258)</a>	1:30pm to 2:50pm
Mon Nov 14, 2016	 <a href="https://canvas.uw.edu/calendar?event_id=922038&amp;include_contexts=course_1065258">ENVH431A - Contaminants in Soil: Regulations &amp; Soil Properties (https://canvas.uw.edu/calendar?event_id=922038&amp;include_contexts=course_1065258)</a>	1:30pm to 2:50pm
	 <a href="https://canvas.uw.edu/courses/1065258/assignments/3361309">Homework #4: Biological monitoring, microbiological contaminants; Valdez case study (https://canvas.uw.edu/courses/1065258/assignments/3361309)</a>	due by 11:59pm
Wed Nov 16, 2016	 <a href="https://canvas.uw.edu/calendar?event_id=922037&amp;include_contexts=course_1065258">ENVH431A - Soil Sampling Techniques (https://canvas.uw.edu/calendar?event_id=922037&amp;include_contexts=course_1065258)</a>	1:30pm to 2:50pm
Mon Nov 21, 2016	 <a href="https://canvas.uw.edu/calendar?event_id=922035&amp;include_contexts=course_1065258">ENVH431A - Case Study: Lead Exposures in Tar Creek, Oklahoma (https://canvas.uw.edu/calendar?event_id=922035&amp;include_contexts=course_1065258)</a>	1:30pm to 2:50pm
	 <a href="https://canvas.uw.edu/courses/1065258/assignments/3361310">Homework #5: Soil Sampling (https://canvas.uw.edu/courses/1065258/assignments/3361310)</a>	due by 11:59pm
Wed Nov 23, 2016	 <a href="https://canvas.uw.edu/calendar?event_id=922034&amp;include_contexts=course_1065258">ENVH431A - Analytical Methods 1 (https://canvas.uw.edu/calendar?event_id=922034&amp;include_contexts=course_1065258)</a>	1:30pm to 2:50pm
Mon Nov 28, 2016	 <a href="https://canvas.uw.edu/calendar?event_id=922032&amp;include_contexts=course_1065258">ENVH431A - Analytical Methods 2 (https://canvas.uw.edu/calendar?event_id=922032&amp;include_contexts=course_1065258)</a>	1:30pm to 2:50pm
Wed Nov 30, 2016	 <a href="https://canvas.uw.edu/calendar?event_id=922033&amp;include_contexts=course_1065258">ENVH431A - Field Trip #3: WA State Lab Shoreline (https://canvas.uw.edu/calendar?event_id=922033&amp;include_contexts=course_1065258)</a>	1:30pm to 2:50pm
Mon Dec 5, 2016	 <a href="https://canvas.uw.edu/calendar?event_id=922031&amp;include_contexts=course_1065258">ENVH431A - Experimental Design I (https://canvas.uw.edu/calendar?event_id=922031&amp;include_contexts=course_1065258)</a>	1:30pm to 2:50pm
	 <a href="https://canvas.uw.edu/courses/1065258/assignments/3383049">Homework #6: lab methods (https://canvas.uw.edu/courses/1065258/assignments/3383049)</a>	due by 11:59pm
Wed Dec 7, 2016	 <a href="https://canvas.uw.edu/calendar?event_id=922030&amp;include_contexts=course_1065258">ENVH431A - Review Session (https://canvas.uw.edu/calendar?event_id=922030&amp;include_contexts=course_1065258)</a>	1:30pm to 2:50pm
	 <a href="https://canvas.uw.edu/courses/1065258/assignments/3361306">Final (https://canvas.uw.edu/courses/1065258/assignments/3361306)</a>	
	 <a href="https://canvas.uw.edu/courses/1065258/assignments/3361312">Participation (https://canvas.uw.edu/courses/1065258/assignments/3361312)</a>	