

HOME**Environmental & Occupational Health Sciences****Page contents:**[Teaching Assistants](#)[Meeting Times and Locations](#)[COURSE Schedule](#)[Academic Accommodations](#)[Announcement](#)**ENVH 433, Spring Quarter, 2009
Environmental and Occupational Sampling and Analysis III****Instructors:**

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COURSE DESCRIPTION: This course will review the sampling and analysis of microbiological contaminants in water, air, and on surfaces. Topics covered will include legal considerations, sampling and experimental design, routes of exposure, sources of exposure, standard methods, QA/QC, data management. This course will be of use for public health professionals, microbiologists, civil and environmental engineers, and environmental scientists.

COURSE OBJECTIVES: At the conclusion of this class, students should be able to:

- Identify various microbial contaminants in environmental and occupational settings
- Describe the methods for sample collection and processing of microbial contaminants in different environmental and occupational exposure situations
- Categorize the methods for detection of microbial contaminants for different environmental and occupational exposure situations

Formulate an appropriate experimental design for assessing environmental and occupational exposures to microbial contaminants
 Explain the advantages and disadvantages of using indicator organism environmental and occupational exposure assessment
 Identify the various indicator organisms in different environmental occupational exposure situations
 List and explain basic chemical and bio-safety laboratory precautions
 Describe quality assurance and quality control (QA/QC) procedures conducting environmental microbiology research
 Analyze, report, and manage scientific data related to environmental occupational health sciences
 Recognize the importance of the legal and regulatory framework related environmental and occupational exposures to microbial contaminants

TEXTS AND REFERENCES: There is no required text for course. Required readings and course materials are available on the course webpage or on reserve in the environmental health library. The following texts are recommended references for this course:

Books:

Standard Methods for the Examination of Water and Wastewater, 19th ed. relevant material will be available on the class web site:
<http://courses.washington.edu/envh433/index.html>

Official Methods of Analysis of AOAC International

Fundamentals of Environmental Sampling, 2007

Principles of Environmental Sampling, 1996

Difco™ & BBL™ Manual – online

<http://www.bd.com/ds/technicalCenter/inserts/difcoBbIManual>

COURSE SECTIONS AND FORMAT: Following the preliminary exam (at end of the second week of class), the students within the course will be divided by the instructors into two sections - one large (12-15 students) two small (8-10 students) - based on student interest, goals, background.

- The large section will continue to meet at the regularly scheduled times and locations, and will follow a *structured laboratory learning format*.

Required additional supplies:

- o bound laboratory notebook (continuing in one used in a previous class is fine)
 - o lab coat (can be purchased at the University bookstore)
- The small section will be further divided into two project groups, and

meet in the Environmental and Occupational Health Microbiology Laboratory (EOHML) in
4225 Roosevelt Way NE
at times to be scheduled with Dr. Gwy-Am Shin and Dr. Scott Meschke. With the instructor's guidance, the smaller groups will follow an *inquiry-based learning format* by designing and implementing their own laboratory exercises focused around the course objectives.

GRADING OPPORTUNITIES

Large section:

Preliminary Exam (10%): A preliminary exam covering lectures and readings from the first two weeks will be held during the 1st hour of class on April 1. The format will be multiple choice, short answer and true/false. Exam will be open book and open notes.

Final Exam (10%): The final exam will be held during the final course period on June 6. The exam will cover all material after the Preliminary Exam, including readings, in-class discussions, and laboratory procedures. Exam will be open notes.

Written Lab Assignments (60%): Students will complete 6 assignments using data and background information from the laboratory exercises. Laboratory assignments are due the Wednesday following completion of each laboratory exercise, unless otherwise announced by the instructor. Assignments are completed individually (i.e. not with your lab partner). All assignments are not accepted without advance approval of the instructor. Teaching assistants do not have the authority to grant extensions, so please don't ask them.

The first question in each assignment will generally be presentation of data collected by student lab groups, and will be weighted more heavily than other problems. *Students must obtain instructor permission (in advance) to present data if they did not participate fully in the data collection (in the case of missed classes, see 'make-up work' below). The raw scores on each problem will be scaled by the instructor based on peer-evaluation and instructor observations during the laboratory period.*

Class Contribution (20%): Students are expected to participate in group discussions, question/answer sessions, and on the course discussion board. Interactive and cooperative learning will be used and therefore your absence impacts the learning of the entire class. Your presence is required for the success of this class. If you are not present and awake, you are not participating (see 'make-up work' below).

Make-up work for large section: To receive full credit for a laboratory assignment, students are expected to contribute an equal part to the group's efforts during in-class laboratory data collection. *Students will have the opportunity to earn credit for work missed for unexcused absences.*

including excessive tardiness. Make-up work for excused absences of laboratory and discussion sections will be negotiated with the student laboratory group and the instructor, and might include volunteering to come in during unscheduled times to check laboratory cultures, or reviewing related journal article.

Examples of excused absences, provided you inform the instructor and your laboratory group IN WRITING (e-mail is okay) in advance of the absence: sponsored events in which you are a required participant (e.g. YOUR varsity or club team participating in a sports event, but NOT you watching a game), job interview, or conference attendance. For illness, please contact your laboratory group and the instructor as soon as possible.

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Small section:

Preliminary Exam (10%): Students will be examined for their mastery of material presented in the introductory lectures during weeks 1 and 2. The exam will consist of approximately 20 questions and the format will be multiple choice, short answer and true/false. Exam will be open book and open notes.

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Project Proposal (10%): Students will write up a sampling plan for their proposed project.

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Project Contribution (20%): Students will be expected to participate in group research projects. Each student will be expected to share equitably in group laboratory and writing activities. Your presence is required for the success of this class. Project participation will be scored based on your review and assessment by the instructor.

Project Report (30%): Student groups will complete a single written project report for their research project. Written project reports should be 10-15 pages in length and should be formatted according to the author instructions for Applied and Environmental Microbiology. Reports will be due the last day of class.

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Project Presentations (30%): Student groups will be expected to present results of their research in an oral presentation to the class. Presentations should be ~30 minutes long with 10 additional minutes for questions. All presentations will be presented during the last week of class.

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Teaching Assistants

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Meeting Times and Locations

Monday, Wednesday, and Friday from 1:30 - 3:20 pm
Health Sciences, T-380

COURSE Schedule

<u>Date</u>	<u>Topic</u>	
		<u>Instructor</u>
<u>March 30</u>	<u>Introduction/overview</u>	<u>Meschke/Roberts/Shin</u>
<u>April 1</u>	<u>QA/QC</u>	<u>Meschke</u>
<u>April 3</u>	<u>Lab Safety</u>	<u>Jennings</u>
<u>April 6</u>	<u>Regulations</u>	<u>Meschke</u>

