

ENVIRONMENTAL ASSESSMENT METHODS II
ENVH 310

Chris Keil, Ph.D., CIH
216 Health Center
372-0368
288-2143 (home – till 10:00)
ckeil@bgnet.bgsu.edu

Course Aim: Students will learn advanced methods of environmental assessments. These advanced methods will build on the foundations of ENVH 309 and will include similar topics, but at a higher level. General topics will include literature research, accessing and using archived data, the theory and practice behind sampling strategies, research design, techniques of environmental sample collection and analysis and statistical analysis of data.

Texts: Selected readings from

Standard Methods for Analysis of Water and Wastewater
OSHA Technical Manual
Industrial Hygiene Evaluation Methods
Statistical Methods for Environmental Pollution Monitoring
Select EPA Methods

Student Learning Outcomes: At the end of the course students will be able to:

Design environmental assessment inquiries framed around the application of the scientific method

Plan and execute methodologically correct exposure assessments by:

- Selecting appropriate sampling strategies
- Identifying and using standard methods
- Exercising quality assurance and quality control practices such as
 - Use of field and lab blanks
 - Spiked sample applications
 - Chain of custody documentation
 - Equipment calibration

Analyze data using advanced descriptive and inferential statistics

- Emphasizing non-uniform distributions found in environmental assessments
- Utilizing non-parametric techniques

Establish assessment project goals and scope and plan activities appropriately

Access and critique peer-reviewed and governmental literature for assessment support

Locate and use warehoused data

Conduct advanced environmental sampling and analysis for a variety of media and agents

Communicate results of environmental assessments in written and oral format.

Instructional Strategy: The instructional strategy for this course will be to present important topics in environmental assessment methodology within the context of an active learning experience. The theory will be presented in the context of an actual environmental assessment application that the students will undertake. These applications will range from a single-day exercise to a multiple week comprehensive assessment project. Student learning will take place via some lecture delivery, but more so by guided inquiry through the different scale assessments that they will do.

Student Learning Activities:

Homework: Homework assignments will be used to ensure that the student adequately prepares for class sessions.

Assessment reports: Reports on the assessment applications for each topic will be submitted following standard formats. The formats used will range from standard scientific paper format to the format for a consulting report, depending on the assessment that is done. Rubrics will be distributed detailing the evaluation of the different types of reports.

Quizzes: Quizzes will be given every third week to assure that the theoretical content is being learned as well as the specific assessment applications of that content.

Comprehensive Field Project: Toward the end of the semester there will be a comprehensive field project that will integrate the methods skills developed throughout the semester. A grading rubric will be developed and distributed to provide guidance in the conduct of the project and preparation of the report. This project will be graded as being equivalent to four assessment reports.

Exams: There will be two examinations, one midterm and one final.

Assessment of Student Learning Outcomes

Student learning outcomes will primarily be evaluated in an integrated nature by the performance on the comprehensive project assignment. The grading rubric for this project will be designed to assess student performance on each of the learning outcomes listed above.

Student Performance Evaluation / Grading:

Homework: 15%
Assessment reports: 35%
Quizzes: 20%
Exams: 30%

Course Content: See attached schedule

Week	Topic					
1	Literature Review	Environmental noise (sound level meters)				
2	Literature Review	Environmental noise (dosimetry)				
	Peer review process					
3	Warehoused data	Environmental air emissions testing (EPA Method 5)				
4	Warehoused data	Environmental air emissions testing (EPA Method 5)				
5	Sampling strategies	Ambient particle evaluation				
	Compliance					
6	Sampling strategies	Ambient particle evaluation				
	Research					
7	Review descriptive statistics	Aspects of water chemistry (alkalinity titrations)				
8	Inferential statistics	Aspects of water chemistry (hardness titrations)				
	Regression					
9	Inferential Statistics	Aspects of water chemistry (phosphorus - spec)				
	Chi Square					
10	Comprehensive statistical applications	Aspects of water chemistry (BOD)				
11	Comprehensive statistical applications	Aspects of water chemistry (coliform)				
12	GIS	GIS practical				
13	GIS	GIS practical				
14	Comprehensive field project	Watershed assessment				
15	Comprehensive field project	Watershed assessment				
16	Exam					

