

ENST 3781 - Environmental Sampling Methods

Fall 2026 Syllabus, Section 01, CRN 43985,

Credit hours: 3

Instructor

Dr. Felicia Armstrong

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Public Instructor Information

Instructor Title: Professor

Instructor Professional Qualifications: PhD (Environmental) Soil Science, Oklahoma State University, 2003; MS, Plant & Soil Science, Alabama A&M University, 1996; BS, Biology, University of Dayton, 1987

Qualified Environmental Professional (QEP), 2015, Board for Global EHS Credentialing (BGC)

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Course Description

3781. Environmental Sampling Methods. Sampling design, including number and types of samples and procedures for taking representative samples of air, water, soil and contents of storage and shipping containers. Two hours of lecture, three hours of laboratory. Prereq.: C or better in ENST 2600/ENST 2600L. 3 s.h.

Course Readings

Group	Title	Author	ISBN
Required	Site Characterization, Sampling and Analysis	Hazardous Materials Training and Research Institute staff	9780471292708
Optional	Biological criteria for the protection of aquatic life: Volume III. Standardized biological field sampling and laboratory methods for assessing fish and macroinvertebrate communities	Ohio Environmental Protection Agency (Ohio EPA)	
Optional	Methods for assessing habitat in flowing waters: Using the Qualitative Habitat Evaluation Index (QHEI)	Ohio EPA	

Site Characterization, Sampling and Analysis

By Hazardous Materials Training and Research Institute staff

Edition : 02

Publisher : WILEY

ISBN 13 : 9780471292708

Ohio Environmental Protection Agency (Ohio EPA). 1989. *Biological criteria for the protection of aquatic life: Volume III. Standardized biological field sampling and laboratory methods for assessing fish and macroinvertebrate communities*. Division of Water Quality Planning and Assessment, Ecological Assessment Section, Columbus, Ohio

Ohio EPA (2006). *Methods for assessing habitat in flowing waters: Using the Qualitative Habitat Evaluation Index (QHEI)*. Technical Bulletin EAS/2006-06-1. Ohio Environmental Protection Agency, Division of Surface Water, Columbus, Ohio.

The course readings are subject to change in the event of extenuating circumstances, research developments, current events, and/or to ensure better learning.

Tentative Schedule of Topics and Assignments

Day	Date	Reading(s)	Proposed Topic	Due/To Prepare for Class
Fri	8/28	Chapter 1 Chapter 2, Section 2.1 Chapter 2, 2.2 Lab: Need computer and internet access	Syllabus, Introduction to sampling Sampling plan – Type, Where, When, How and How Many Lab: Where to find background information	Complete online field and lab safety Lab Questions on site investigations
Fri	9/4	Chapter 2, Section 2.3 and 2.4 Chapter 3, Section 3.1 and 3.3 Lab: Chapter 3.2	Statistics, Analytical Methods Quality Assurance/Quality Control Field documentation, labeling, shipping Safety Plan, Basic sampling – invasive or noninvasive Lab: Sampling Equipment	Lab exercise on field equipment.
Fri	9/11	Ohio EPA, Biological criteria for the protection of aquatic life: Volume III, Subsection 2 Lab: Fish Sampling	Organisms Sampling – fish Sampling equipment preparation Lab: Fish sampling (seining nets)	Lab exercise on calculating Pollution Tolerance Index Quiz 1
Fri	9/18	Ohio EPA, Biological criteria for the protection of aquatic life: Volume III, Subsection 1 Lab: Macro sampling	Organisms Sampling, Indices Use – macros Lab: Macro sampling	Lab questions on types of macro sampling.
Fri	9/25	Chapter 6, Sections 6.1 to 6.4	Water Sampling – Pre-sampling analysis Water sampling considerations Lab: Using water sampling equipment and QHEI Scoring	Lab exercise on water sampling Submit completed QHEI
Fri	10/2	Chapter 5, Section 5.1 to 5.2	Sediment sampling Lab: Using sediment samplers	
Fri	10/9	Chapter 6, Section 6.5 to 6.7	QA/QC Drinking water sampling Lab: GW Sampling	Water Sampling questions
Fri	10/16	Chapter 5, Sections 5.3	Soil Sampling – grid, zone, transects, composites Lab: Videos on soil sampling, Soil sampling planning exercise	
Fri	10/23	Chapter 4	Air Sampling Lab: Soil cores and handling of samples	Quiz 2
Fri	10/30		Other field sampling techniques (forest/ trees) and considerations Lab: Backup for poor weather conditions - plant diversity sampling or Forest inventory video	Lab questions on plant sampling
Fri	11/6	Chapter 9	Data Validation and Interpretation Planning water sampling - line sampling Lab: Group Exercise	Planning worksheet
Fri	11/13	Chapter 7	Sampling Drums and Containers Lab: Worksheet exercise	
Fri	11/20	Sampling Project	Statistics and sampling Lab: Sampling Project	Statistics Homework Quiz 3'
Fri	11/27	No Class, Holiday		
Fri	12/4	Sampling Project	Presentation of Sampling Project	Sampling Project Presentation Due
Fri	12/11	Sampling Project	Presentation of Sampling Project Review for Final	

The course schedule, policies, procedures, and assignments in this course are subject to change in the event of extenuating circumstances, by mutual agreement, and/or to ensure better learning.