

WATR 492/692: Advanced Techniques of Environmental Analysis

Syllabus

Course Information

Class Times: Friday 1:00 pm – 4:00 pm

Location: TNR 261

Credits: 3.0

Instructors Information

Dr. Kyle Herrman

Email: Kyle.Herrman@uwsp.edu (preferred method)

Office: 263 Trainer Natural Resources Building

Office Phone: 715-346-4832

Office Hours: By appointment

Course Objective

The goal of this course is to expose students to advanced methods in environmental analysis. Specifically, students should learn how to analyze samples for a variety of environmental media including water, soil, and gas. The overall structure of the class will be to analyze a set of samples throughout the semester using a variety of methods. By the end of the semester students will give an oral presentation detailing the methods they used and the results they found.

Learning Outcomes

By the end of the semester a student will be able to:

1. Properly calibrate an instrument and be able to utilize quality control measures when calibrating
2. Read and write a standard operating procedure
3. Prepare samples for analysis such as soil extractions, filtration, and digestions
4. Conduct advanced environmental techniques using a detailed standard operating procedure

Textbooks

Online Textbook

Harvey, D. 2016. Analytical Chemistry 2.1. McGraw-Hill Companies. Found online at:

http://dpuadweb.depauw.edu/harvey_web/eTextProject/AC2.1Files/AnalChem2.1.pdf.

Attendance

This class is entirely lab based and thus attendance is mandatory. Material will be posted online that will prepare student for each week's exercise, but each student must show up to lab to complete the material. If you cannot make it to class, please reach out to me immediately so we can determine an alternative format.

Weekly Assignments

There will be periodic assignments based on weekly lab activities. These assignments can range from submitting Excel files with calibration curves to submitting Word documents with student written SOP's. Check periodically with the Canvas page to view assignments.

Project to Complete

Each semester I will present the class with a scenario that we will examine using a variety of environmental methods. After testing samples throughout the semester, I will expect students to prepare a 20-minute PowerPoint video outlining the methods they used and the results they found. This video needs to be carefully put together and clearly explain methods and results.

Graduate Students

One expectation of graduate students in this class will be to write a technical paper on the project they work on during the semester. This will follow a typical scientific paper format (Introduction, Methods, Results, Discussion, and Conclusion) and will be due either during week 15 or 16 of the semester.

Points

Undergraduate Student		Graduate Student	
9 Weekly Assignments (10)	90 (60%)	9 Weekly Assignments (10)	90 (45%)
Final Presentation	60 (40%)	Final Presentation	60 (30%)
		Technical Paper	50 (25%)
Total	150	Total	200

Grading Scale

A	>92	B	83-86	C	73-76	D	60-66
A-	90-92	B-	80-82	C-	70-72	F	<60
B+	87-89	C+	77-79	D+	67-69		

Tentative Schedule (subject to change as semester progresses)

Week	Date	Topic	Assignments	Reading
1	Sept 3	No Class		
2	Sept 10	Calibration Curves and QC	Calibration Curve	Pgs: 147-178
3	Sept 17	Minimum detection limits and duplicates	MDL Excel File	Reading on Canvas
4	Sept 24	Spike recovery	Calculations	Pgs: 957-961
5	Oct 1	Soil Extractions (KCl) and ammonium analysis	Results	Method on Canvas
6	Oct 8	Digestions and Extractions for Heavy Metals	None	Methods on Canvas
7	Oct 15	ICP OES Analysis	Results	Pgs: 599-608
8	Oct 22	Nitrogen Mineralization I	None	Method on Canvas
9	Oct 29	No Class		
10	Nov 5	Nitrogen Mineralization II	Results	
11	Nov 12	Microbial Biomass I	None	Method on Canvas
12	Nov 19	Microbial Biomass II		
13	Nov 26	Thanksgiving – No Class		
14	Dec 3	Carbon Analysis for MBC	Results	Method on Canvas
15	Dec 10	No lab	Final Project	
Finals				

Classroom Civility:

Any successful learning experience requires mutual respect on the part of the student and the instructor. Neither instructor nor student should be subject to others' behavior that is rude, disruptive, intimidating, or demeaning. The instructor has primary responsibility for and control over classroom behavior and maintenance of academic integrity.

Inform Your Instructor of Any Accommodations Needed:

If you have a documented disability and verification from the Disability and Assistive Technology Center and wish to discuss academic accommodations, please contact your instructor as soon as possible. It is the student's responsibility to provide documentation of disability to Disability Services and meet with a Disability Services counselor to request special accommodation before classes start.

The Disability and Assistive Technology Center is located in 609 Albertson Hall and can be contacted by phone at (715) 346-3365 (Voice) (715) 346-3362 (TDD only) or via email at datctr@uwsp.edu or <mailto:datctr@uwsp.edu>

Statement of Policy

UW-Stevens Point will modify academic program requirements as necessary to ensure that they do not discriminate against qualified applicants or students with disabilities. The modifications should not affect the substance of educational programs or compromise academic standards; nor should they intrude upon academic freedom. Examinations or other procedures used for evaluating students' academic achievements may be adapted. The results of such evaluation must demonstrate the student's achievement in the academic activity, rather than describe his/her disability.

If modifications are required due to a disability, please inform the instructor and contact the Disability and Assistive Technology Center in 609 ALB, or (715) 346-3365.

Commit to Integrity:

As a student in this course (and at this university) you are expected to maintain high degrees of professionalism, commitment to active learning and participation in this class and also integrity in your behavior in and out of the classroom.

UWSP Academic Honesty Policy & Procedures:

Student Academic Disciplinary Procedures

UWSP 14.01 Statement of principles

The board of regents, administrators, faculty, academic staff and students of the university of Wisconsin system believe that academic honesty and integrity are fundamental to the mission of higher education and of the university of Wisconsin system. The university has a responsibility to promote academic honesty and integrity and to develop procedures to deal effectively with instances of academic dishonesty. Students are responsible for the honest completion and representation of their work, for the appropriate citation of sources, and for respect of others' academic endeavors. Students who violate these standards must be confronted and must accept the consequences of their actions.

UWSP 14.03 Academic misconduct subject to disciplinary action.

(1) Academic misconduct is an act in which a student:

- (a) Seeks to claim credit for the work or efforts of another without authorization or citation;
- (b) Uses unauthorized materials or fabricated data in any academic exercise;
- (c) Forges or falsifies academic documents or records;
- (d) Intentionally impedes or damages the academic work of others;
- (e) Engages in conduct aimed at making false representation of a student's academic performance; or
- (f) Assists other students in any of these acts.

(2) Examples of academic misconduct include, but are not limited to: cheating on an examination; collaborating with others in work to be presented, contrary to the stated rules of the course; submitting a paper or assignment as

one's own work when a part or all of the paper or assignment is the work of another; submitting a paper or assignment that contains ideas or research of others without appropriately identifying the sources of those ideas; stealing examinations or course materials; submitting, if contrary to the rules of a course, work previously presented in another course; tampering with the laboratory experiment or computer program of another student; knowingly and intentionally assisting another student in any of the above, including assistance in an arrangement whereby any work, classroom performance, examination or other activity is submitted or performed by a person other than the student under whose name the work is submitted or performed.

Laboratory Safety

Safety procedures must be followed at all times to avoid danger to yourself and those you share laboratory with. If you ever have a safety question, **ASK!!!**

General – Basic safety equipment in the laboratory includes: eye wash station, safety showers, gloves, aprons, fire extinguishers, chemical absorbents, etc. You should be aware of the location of all these items

Chemical Spills – In the event of a spill:

1. Alert others in area.
2. Determine chemical type.
3. Put on necessary protective equipment.
4. Contain spill with absorbent.
5. Call ×3456 or 9-911 or 911 if necessary.

Chemical absorbent is located by the door in room 260.

Note: not all chemicals can be contained with paper towels, in fact some chemicals are flammable in contact with organic materials such as paper.

Fire – In the event of a fire:

1. Turn off gas, remove flammables.
2. Alert others in area.
3. Determine chemical type.
4. Contain with appropriate material.

Attire – Chemical spills do happen. To avoid damage to your clothes or person we recommend: laboratory coats, old clothes, closed toe shoes, and (when necessary) use of PPE.

Sharps – Needles, etc. are to be disposed of in “Sharps” containers, not the trash.