

NRES 251: Introduction to Soil and Water Resources

Fall Semester 2019 SYLLABUS

Course Information:

Lecture Time: Monday/Tuesday/Thursday 2:00 pm – 2:50 pm

Lecture Location: TNR 120

Credits: 4

Lab Times:

Section 2-1 – Tuesday 9:00 am – 10:50 pm (Herrman)

Section 2-2 – Wednesday 12:00 pm – 1:50 pm (Michitsch)

Section 2-3 – Monday 3:00 pm – 4:50 pm (Gunderson)

Section 2-4 – Tuesday 3:00 pm – 4:50 pm (Gunderson)

Lab Location: 262 Trainer Natural Resources Building

Prerequisites: MATH 107

Instructors Information:

Dr. Kyle Herrman

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

Office: 263 Trainer Natural Resources Building

Office Phone: 715-346-4832

Office Hours: Thursday 10:00 am – 12:00 pm or by appointment

Dr. Rob Michitsch

Email: Rob.Michitsch@uwsp.edu (*preferred contact method*)

Office: 276 Trainer Natural Resources Building

Office Phone: 715-346-4190

Office Hours: TBA

Ms. Alyssa Gunderson

Email: Alyssa.Gunderson@uwsp.edu (*preferred contact method*)

Office: 275 Trainer Natural Resources Building

Office Phone: 715-346-3760

Office Hours: Monday 1:00 – 2:00 pm and Wednesday 1:00 – 2:00 pm

Course Objective:

The objective of this class is to expose students to the principles of soils and water resources. This will be accomplished using direct instruction methods during lecture and hands-on experience in the lab and in the field. After completing this course a student will be able to understand how water flows through the landscape, how specific aquatic ecosystems function, and where sources of water contamination are commonly found. Regarding soils, students will also be able to describe the formation and composition of soils. In addition, students will learn how water, organic matter, and elements are processed within soils and why this medium is critical for supporting life on Earth.

Learning objectives:

- Describe the hydrologic cycle in a watershed including groundwater interactions
- Demonstrate how streams/river, lakes, and wetlands function on the landscape
- Evaluate basic water chemistry data
- Describe the formation of soils
- Determine soil texture and interpret how texture will impact soil function
- Illustrate the connection between the physical properties of soil, soil chemistry, and the availability of macro and micronutrients

Required text:

Brady, NC and RR Weil. 2010. Elements of the Nature and Property of Soils (3rd ed). Prentice Hall. New Jersey.

Pennington, KL and TV Cech. 2010. Introduction to Water Resources and Environmental Issues (1st ed). Cambridge University Press. New York.

Grades:

Scale:

A	93-100	C	73-76
A-	90-92	C-	70-72
B+	87-89	D+	67-69
B	83-86	D	63-66
B-	80-82	D-	60-62
C+	77-79	F	<60

Points:

	<u>Points</u>	<u>Total</u>	<u>Percent of Total Grade</u>
Exams (4)	30	120	50%
Lab Quizzes (2)	20	40	17%
Lab Assignments (8)	10	80	33%

Exams:

Four exams will be given in class and consist of multiple choice questions. Exams will cover new material and will not be cumulative although some material in this class will carry over through the entire semester.

Lab Assignments:

Lab assignments are found in the lab manual or will be assigned during lab. Be sure the assignments are clearly written and all of your work can be followed. If asked create Excel graphs with all your axes labeled and be sure to include units. If asked for a brief explanation then please print out your assignment using a word processor and check all spelling/grammar.

Lab Quizzes:

Two lab quizzes will be given throughout the semester. These quizzes will cover only material introduced in your lab section. They could be short answer or multiple choice and will test you on the concepts you applied in the lab or field during lab time.

Civility in the Classroom:

To create and preserve a classroom atmosphere that optimizes teaching and learning, all participants share a responsibility in creating a civil and non-disruptive forum. Students are expected to conduct themselves at all times in this classroom in a manner that does not disrupt teaching or learning.

- You are expected to be on time. Class starts promptly at 2:00 pm. You should be in your seat and ready to begin class at this time. Class ends at 2:50 pm. Packing up your things early is disruptive to others around you and to myself.
- Cell phones must be turned off during class, unless you have informed me ahead of time that you are expecting an emergency message.
- Anyone using tablets and laptops to take notes must sit on the sides or back of the lecture hall. These devices can be distracting to people sitting near you. If I find that you are using these devices for non-class room related activities then I will ask you to not use them for the remainder of the semester.
- Classroom participation is an important part of our lectures and is crucial for labs. To participate you must attend class having prepared the materials for the day. Questions and comments must be relevant to the topic at hand.
- Raise your hand to be recognized.
- Classroom discussion should be civilized and respectful to everyone and relevant to the topic we are discussing. Classroom discussion is meant to allow us to hear a variety of viewpoints. This can only happen if we respect each other and our differences.

Late Policy:

Lab assignments are considered late if they are not turned in at the beginning of lab on the due date. Assignments can be turned in late, but 1 point will be taken off for each day the assignment is late. Exams **cannot** be made up unless there is a valid, documented excuse for missing class.

Attendance:

If you are going to miss a lecture or an exam, please contact me as soon as possible. I will provide a make-up exam if the absence is appropriately documented and I am contacted prior to the exam.

Academic Misconduct:

Violations of academic integrity will result in automatic failure of the class and referral to the proper university officials. The work a student submits in class is expected to be the student's own work and must be work completed for that particular class and assignment. Students wishing to build on an old project or work on a similar topic in two classes must discuss this with the professor. Academic dishonesty includes but is not limited to: cheating on an examination and submitting an assignment as your own work when all or part of the assignment is the work of another without proper citation. Sanctions can be applied whether the violation was intentional or not so please know how to properly cite references for a scientific paper.

For further information regarding UWSP policy please refer to Chapter 14 in the University Handbook (<http://www.uwsp.edu/admin/stuaffairs/rights/rightsChap14.pdf>)

Tentative Schedule (could change as semester progresses):

Lecture Schedule

	Date	Lecture Topic	Reading
	Sept 3	Introductions and syllabus	
1	Sept 5	Hydrologic Cycle	Ch. 3 Pennington and Cech
	Sept 9		
	Sept 10		
	Sept 12		
2	Sept 16	Watershed Basics	Ch. 5 Pennington and Cech
	Sept 17		
	Sept 19		
	Sept 23		
3	Sept 24	Water Use	Pgs 17-32, Ch. 11 Pennington and Cech
	Sept 26		
	Sept 30	Exam I	
5	Oct 1	Groundwater	Ch. 6 Pennington and Cech
	Oct 3		
6	Oct 7	Water Quality	Ch. 4 Pennington and Cech
	Oct 8		
7	Oct 10	Nitrogen and Phosphorus	Additional readings provided on Canvas page
	Oct 14		
	Oct 15	Streams and Rivers	Ch. 8 Pennington and Cech
8	Oct 17	Lakes	Ch. 7 Pennington and Cech
9	Oct 21		
10	Oct 22	Wetlands	Ch. 9 Pennington and Cech
	Oct 24	Exam II	
11	Oct 28	Soil Composition	Ch. 1 Brady and Weil
12	Oct 29	Soil Formation	Ch. 2 Brady and Weil
	Oct 31		
13	Nov 4	Soil Classification	Ch. 3 Brady and Weil
14	Nov 5	Soil Physical Properties	Ch. 4 Brady and Weil
	Nov 7		
15	Nov 11	Soil Water	Ch. 5 Brady and Weil
	Nov 12		
16	Nov 14	Organic Matter	Ch. 11 Brady and Weil
	Nov 18		
	Nov 19	Exam III	
	Nov 21	Soil Chemistry – CEC	Ch. 8 Brady and Weil
17	Nov 25		
	Nov 26		
	Nov 28		
18	Dec 2	Soil pH	Pgs 269-301 Brady and Weil
19	Dec 3	Soil Biology	Ch. 10 Brady and Weil
	Dec 5	Dirt – The Movie	
	Dec 9		
20	Dec 10	Soil Conservation – BMP's	Pgs 481-481, 513-516 Brady and Weil
	Dec 12		
<p><i>Finals Week</i> Dec 18 from 2:45 pm – 4:45 pm: Exam IV</p>			

Lab Schedule

WEEK # of semester	Week of:	TOPIC
1	9/2	No Lab
2	9/9	Soil horizons, forming factors, and texture p. 3-16
3	9/16	Field trip – Stream flow measurement p. 53-58
4	9/23	Field trip – Wetlands, water quality - Moses Creek p. 67-74
5	9/30	Principles of groundwater hydrology p. 83-89
6	10/7	Field trip – Ground water-surface water connection – Little Plover River p. 90-94
7	10/14	Groundwater resource evaluation - Little Plover River GIS p. 95-112
8	10/21	Field trip – Water supply and wastewater treatment p. 75-78 Lab quiz
9	10/28	Field trip – Soil profile description writing p. 45-52
10	11/4	Field trip – Water and heat in a soil profile p. 38-42
11	11/11	Watershed analysis – GIS p. 100-112
12	11/18	No Labs – Thanksgiving Break
13	11/25	Soil texture, density, porosity, and volumetric moisture content p. 19-36
14	12/2	Soil cation exchange capacity p. 41-44
15	12/9	The soil survey and its interpretation for land use planning p. 123-138 Lab quiz