

NRES 251: Introduction to Soil and Water Resources

Fall Semester 2016

SYLLABUS

Course Information:

Lecture Time: Monday/Wednesday/Friday 2:00 pm – 2:50 pm

Lecture Location: Monday/Wednesday in 120 TNR; Friday in 170 TNR

Credits: 4

Lab Times:

Section 5 – Tuesday 9:00 am – 10:50 pm (Gunderson)

Section 6 – Monday 3:00 pm – 4:50 pm (Herrman)

Section 7 – Tuesday 3:00 pm – 4:50 pm (Gunderson)

Lab Location: 262 Trainer Natural Resources Building

Prerequisites: MATH 100

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: Tuesday 10:00 am – 12:00 pm or by appointment

Ms. Alyssa Gunderson

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

Office: 275 Trainer Natural Resources Building

Office Phone: 715-346-3760

Office Hours: TBD

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. In regards to 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.

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
	Sept 7	Introductions and syllabus
1	Sept 9	Hydrologic Cycle
	Sept 12	
	Sept 14	
	Sept 16	
2	Sept 19	Watershed Basics
	Sept 21	
	Sept 23	
3	Sept 26	Water Use
	Sept 28	
	Sept 28	Exam I
4	Sept 30	Hydrology – Surface Waters
	Oct 3	
5	Oct 5	Hydrology – Groundwater
	Oct 7	
6	Oct 10	Water Quality
	Oct 12	
7	Oct 14	Nitrogen and Phosphorus
	Oct 17	
8	Oct 19	Streams and Rivers
9	Oct 21	Lakes
10	Oct 24	Wetlands
	Oct 26	Exam II
11	Oct 28	Soil Composition
12	Oct 31	Soil Formation
	Nov 2	
13	Nov 4	Soil Classification
14	Nov 7	Soil Physical Properties
	Nov 9	
15	Nov 11	Soil Water
	Nov 14	
16	Nov 16	Organic Matter
	Nov 18	
	Nov 21	Exam III
	Nov 23	NO CLASS
	Nov 25	NO CLASS
17	Nov 28	Soil Chemistry – CEC
	Nov 30	
	Dec 2	
18	Dec 5	Soil pH
19	Dec 7	Soil Conservation – BMP's
	Dec 9	Dirt – The Movie
	Dec 12	
20	Dec 14	Soil Biology
<i>Finals Week</i>		
Dec 16 from 2:45pm – 4:45pm: Exam IV		

Lab Schedule

WEEK # of semester	Week of:	TOPIC
1	9/5	No Lab
2	9/12	Soil horizons, forming factors, and texture p. 4-17
3	9/19	Field trip – Stream flow measurement and stream formation p. 54-60
4	9/26	Field trip – Water quality - Moses Creek, wetlands, and Lake Joanis p. 69-76
5	10/3	Principles of groundwater hydrology p. 86-92
6	10/10	Field trip – Groundwater-surface water connection – Little Plover River p. 93-98
7	10/17	Groundwater resource evaluation - Little Plover River GIS p. 99-117
8	10/24	Field trip – Water supply and wastewater treatment p. 77-85 Lab quiz
9	10/31	Field trip – Soil profile description writing p. 47-53
10	11/7	Field trip – Water and heat in a soil profile p. 38-42
11	11/14	Watershed analysis – GIS p. 105-117
12	11/21	No Labs – Thanksgiving Break
13	11/28	Soil density, porosity, and volumetric moisture content p. 18-37
14	12/5	Soil cation exchange capacity p. 43-46
15	12/12	The soil survey and its interpretation for land use planning p. 128-141 Lab quiz