

**NRES 251: Introduction to Soil and Water Resources**  
**Spring Semester 2023**  
**SYLLABUS**

**Course Information:**

Lecture:

Lecture Location: Trainer Natural Resources (TNR) 170

Lecture Time: Mon, Wed, and Fri at 9:00 am – 9:50 am

Credits: 4

Prerequisites: MATH 107

Laboratory:

Lab Location: TNR 262

Lab Times:

Section 1-1 (Scharenbroch): Wednesday at 10:00 am – 11:50 am

Section 1-3 (Raabe): Tuesday at 12:00 pm – 1:50 pm

Section 1-4 (Raabe): Wednesday 12:00 pm – 1:50 pm

Section 1-5 (Gunderson): Wednesday 2:00 pm – 3:50 pm

**Instructors Information (alphabetical):**

Ms. Alyssa Gunderson

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Office Hours: Thursday 1:00 pm – 2:00 pm

Dr. Kyle Herrman

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Office Hours: Thursday 11:00 am – 12:00 pm

Dr. Josh Raabe

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Office Phone: 715-346-2689

Office Hours: Monday 11:00 am – 1:00 pm

Dr. Bryant Scharenbroch

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Office: 278 Trainer Natural Resources Building

Office Phone: 715-346-3704

Office Hours: Wednesday 12:00 pm – 12:50 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 composition and formation of soils
- Determine soil properties and interpret how they will impact soil function
- Illustrate the connection between soil properties and management
- 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

## Required Texts:

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

Pennington, KL and TV Cech. 2010. Introduction to Water Resources and Environmental Issues (1<sup>st</sup> 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:

Student grades will be determined based on the following breakdown of points:

	<u>Points</u>	<u>Total</u>	<u>Percent of Total Grade</u>
Exams (4)	30	120	50.0%
Lab Quizzes (2)	25	50	20.8%
Lab Assignments (14)	5	70	29.2%

**Lecture Exams:**

Four lecture exams will be given throughout the semester. Exam questions will be multiple choice, short answer, T/F, and other types. Exams will only cover material from a given unit and will not be cumulative although some material in this class will carry over through the entire semester. Lecture exams will likely occur on the scheduled date, and can be moved to alternate dates at the instructors' discretion.

**Lecture Quizzes:**

Lecture quizzes are available on the course website. The lecture quizzes are useful study aides for your comprehension of the course material. It is highly recommended that you do the lecture quizzes, but they are not required and no points are associated with them.

**Lab Quizzes:**

Two lab quizzes will be given throughout the semester. These quizzes will cover only material introduced in your lab section. They will be short answer, multiple choice, calculations, and other question formats. The quizzes may be given in person and/or via Canvas. Your lab instructor will give you more information regarding when and how long you will be given to complete your quiz.

**Lab Assignments:**

Lab assignments will be assigned during lab. Your lab manual has beneficial material for you to look over and use during lab exercises, but lab assignments and exercises may be altered from the manual. Therefore, follow the instructions from your lab instructor regarding what you must complete and submit for your assignment. You will submit your lab assignments via Canvas. Be sure to read the assignment carefully and answer all questions that are asked. Some assignments you may have to submit Excel or Word files in Canvas. Be sure to submit the entire file and not a screen capture of the file. Any assignments submitted for this course must be your work.

**Late Policy:**

Lecture exams and quizzes cannot be made up unless there is a valid, documented excuse for missing these items. Lab assignments are considered late if they are not turned in at the specific date and time on the assignment. Lab assignments can be turned in late, but 1 point will be taken off for each day the assignment is late. Lab quiz grading will be determined by your lab instructor.

**Attendance:**

Attendance is required for all in-person activities. If you are going to miss lab, please contact your instructor before your lab time and as soon as possible. If the absence is appropriately documented arrangements may be possible for you to make up your lab assignment that week.

## **COVID-19:**

The health and safety of our students, faculty and staff are top priorities at UW-Stevens Point. We are committed to addressing concerns regarding the 2019 novel coronavirus (COVID-19) and will continue to provide information on how we are slowing the spread on our campus. All students, faculty and staff will follow the UWSP policies and guidelines pertaining to the COVID-19. See:

<https://www.uwsp.edu/coronavirus/Pages/default.aspx>, call the UWSP COVID hotline at 715-346-2619, Monday through Friday from 7:45 a.m.-4:30 p.m., or email [covid@uwsp.edu](mailto:covid@uwsp.edu).

## **Special Accommodations:**

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 their 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](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.

## **Unauthorized Sharing of Course Materials:**

Lecture materials, recordings, and lab manuals for this course are protected intellectual property at UW-Stevens Point. Students in this course may use the materials and recordings for their personal use related to participation in this class. Students may also take notes solely for their personal use. If a lecture is not already recorded, you are not authorized to record my lectures without my permission unless you are considered by the university to be a qualified student with a disability requiring accommodation. [Regent Policy Document 4-1] Students may not copy or share lecture materials and recordings outside of class, including posting on internet sites or selling to commercial entities. Students are also prohibited from providing or selling their personal notes to anyone else or being paid for taking notes by any person or commercial firm without the instructor's express written permission. Unauthorized use of these copyrighted lecture materials and recordings constitutes copyright infringement and may be addressed under the university's policies, UWS Chapters 14 and 17, governing student academic and non-academic misconduct.

## **Commitment 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.

**Lecture Schedule (could change as semester progresses):**

<b>Week</b>	<b>Date</b>	<b>Lecture Topic</b>	<b>Reading</b>
1	1/23/23	Soil function and composition	Ch. 1 Brady and Weil
	1/25/23		
	1/27/23		
2	1/30/23	Soil horizons and formation	Ch. 2 Brady and Weil
	2/1/23	Soil classification	Ch. 3 Brady and Weil
	2/3/23		
3	2/6/23	Soil physical properties	Ch. 4 Brady and Weil
	2/8/23		
	2/10/23	Soil water and air	Ch. 5 Brady and Weil
4	2/13/23	Extra time and/or review	
	2/15/23		
	<b>2/17/23</b>	<b>EXAM 1</b>	
5	2/20/23	Soil temperature	Ch. 7 Brady and Weil
	2/22/23		
	2/24/23	Soil colloids	Ch. 8 Brady and Weil
6	2/27/23	Soil pH	Ch. 9 Brady and Weil
	3/1/23		
	3/3/23		
7	3/6/23	Soil biology	Ch. 10 Brady and Weil
	3/8/23		
	3/10/23	Soil organic matter	Ch. 11 Brady and Weil
8	3/13/23	Extra time and/or review	
	3/15/23		
	<b>3/17/23</b>	<b>EXAM 2</b>	
9	3/20/23	<i>SPRING BREAK</i>	
	3/22/23		
	3/24/23		
10	3/27/23	Hydrologic Cycle	Ch. 3 Pennington and Cech
	3/29/23		
	3/31/23		
11	4/3/23	Watershed Basics	Ch. 5 Pennington and Cech
	4/5/23		
	4/7/23		
12	4/10/23	Water Use	Pgs 17-32, Ch. 11 Pennington and Cech
	4/12/23		
	4/14/23		
13	4/17/23	<b>EXAM 3</b>	
	<b>4/19/23</b>		
	4/21/23	Groundwater	Ch. 6 Pennington and Cech
14	4/24/23	Water Quality	Ch. 4 Pennington and Cech
	4/26/23		
	4/28/23		
15	5/1/23	Nitrogen and Phosphorus	
	5/3/23		
	5/5/23		
16	5/8/23	Streams and Rivers	Ch. 8 Pennington and Cech
	5/10/23	Lakes	Ch. 7 Pennington and Cech
	5/12/23	Wetlands	Ch. 9 Pennington and Cech
<b>Finals week</b>		<b>EXAM 4 – Monday, 5/15/23 from 8:00am – 10:00am</b>	

**Laboratory Schedule (could change as semester progresses):**

<b>Week</b>	<b>Date</b>	<b>Topic</b>
1	1/24 – 1/28	Soil horizons, forming factors, and texture (p. 3)
2	1/31 – 2/4	Soil density, porosity, and volumetric moisture (p. 20)
3	2/7 – 2/11	Soil cation exchange capacity (p. 42)
4	2/14 – 2/18	<b>Field trip</b> – Lake characteristics (p. 60)
5	2/21 – 2/25	Principles of ground water hydrology (p. 84)
6	2/28 – 3/4	Watershed analysis – GIS (p. 101)
7	3/7 – 3/11	<b>Field trip</b> – Water supply and wastewater treatment (p. 76)
8	3/14 – 3/18	<b>LABORATORY QUIZ 1</b>
9	3/21 – 3/25	<i>SPRING BREAK</i>
10	3/28 – 4/1	<b>Field trip</b> – Water and heat in soil profile (p. 38)
11	4/4 – 4/8	<b>Field trip</b> – Wetlands and water quality (p. 68)
12	4/11 – 4/15	<b>Field trip</b> – Ground water and surface water connection – Little Plover River (p. 91)
13	4/18 – 4/22	Ground water resource evaluation – Little Plover River – GIS (p. 96)
14	4/25 – 4/29	<b>Field trip</b> – Soil profile description writing (p. 46)
15	5/2 – 5/6	<b>Field trip</b> – Stream flow measurements and stream formation (p. 54)
16	5/9 – 5/13	Soil survey and interpretation for land use planning (p. 124) <b>LABORATORY QUIZ 2</b>

Pages listed are the first page for each topic in the Laboratory Manual.