

**Lecture** MWF 11:00-11:50 in TNR 120

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## I. Course Aims:

Students in this course will be introduced to fundamental principles of soil and water resources. Of primary interest will be describing how water moves through the landscape, how aquatic ecosystems function, and how human activities impact water quality and its distribution. Students will also gain an understanding of how soils are formed, and how soil properties affect its function. Importantly, students will gain a deeper appreciation of the critical roles soil and water resources play in sustaining plant and animal life on our planet.

### ***Specific Learning Objectives***

By the end of this course, students will be able to:

- Describe how the hydrologic cycle controls water movement in watersheds
- Explain how groundwater and surface water bodies function in the landscape
- Evaluate water quality using basic chemical data
- Discuss how soils are formed
- Determine soil texture and interpret textural effects on soil functional characteristics
- Illustrate the connections between soil physical attributes, chemical properties, and nutrient availability

## II. Course Format:

This course contains both in-person lecture and lab components. Lectures will introduce conceptual and applied topics pertinent to the study of soil and water resources. The lab session will provide experience with techniques used to measure water movement, water quality, and soil physical and chemical properties, among other knowledge and skills.

### ***Attendance policy***

If you cannot attend a scheduled class session or will be excessively tardy (>10 minutes late), you must have an excused absence to be eligible for any points awarded during the missed class. Excused absences will be considered by Dr. Keymer on a case-by-case basis. It is your responsibility to contact Dr. Keymer at least one week prior to an absence if you have a scheduled conflict that cannot be moved. Illness related absences must be excused by a doctor's note or Dean of Students notification. For other unforeseen circumstances resulting in one or more missed classes, Dr. Keymer must be contacted as soon as possible to arrange for alternate access to material. For both excused and unexcused absences, the student is responsible for reviewing all covered material and announcements with Dr. Keymer or his/her classmates.

### ***Expectations***

I expect that you will respect others, take responsibility for your own learning, participate and ask questions, and maintain a safe working environment. All communication with instructors or classmates must be respectful in content and tone. The classroom must be an environment where everyone feels comfortable and able to learn. Accordingly, students are required to treat others with respect and any behavior that impedes the ability of other students to learn will not be tolerated. Such disrespectful behavior includes, but is not limited to disruptive discussions and using electronic devices for non-class related activity. Students are expected to come prepared to class, arriving on time, having read through assigned materials, and ready to participate.

As your instructor, you can expect Dr. Keymer to do everything in his power to be fair, to be available and willing to help you, to provide feedback on work in a timely manner, to relate material to contemporary issues, and to ask you think.

In addition to the specific expectations outlined above, all participants in the course are expected to act in accordance with the UWSP rules for academic conduct. For more information, see the following link: <https://www.uwsp.edu/dos/Pages/Student-Conduct.aspx>.

## **III. Course Requirements**

### ***Required textbooks***

*Elements of the Nature and Property of Soils*, 3rd Edition by N. C. Brady and R. R. Weil (2010) Prentice Hall, New Jersey.

*Introduction to Water Resources and Environmental Issues* by K. L. Pennington and T. V. Cech (2010) Cambridge University Press, New York.

### ***Supplemental materials***

Additional course materials will be made available through Canvas. Lecture slides will usually be posted before class. Announcements may be disseminated via Canvas, email, or in lecture.

### ***Exams***

Four exams will be given in lecture covering new material. These exams will not be cumulative, but may relate to topics covered earlier in the semester. The last exam will be given during the final exam period. No make-up exams will be given without a documented excusable absence.

### ***Lab assignments***

Eight lab assignments assessing your comprehension of related topics will be assigned by your lab instructor. Ask your lab instructor for details on expectations for those assignments.

### ***Lab quizzes***

Lab quizzes will be conducted during the lab period, cover material introduced in your lab section, and be graded by your lab instructor.

### ***Regrade requests***

Unless otherwise instructed, requests for regrading any assignment or exam must be submitted to Dr. Keymer ***in writing*** within one week of the graded item being returned.

### **Grading scale**

Letter grade assignments will be made according to the following scale:

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

### **Point distribution**

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

Exams (4)	50%
Lab assignments (8)	33%
Lab quizzes (2)	17%
<b>Total</b>	<b>100%</b>

Dr. Keymer may also offer extra credit opportunities at his discretion.

## **IV. Academic Integrity**

All students have agreed to the UWSP Code of Conduct and are expected to know and abide by the rules documented therein. The policy can be found through the Dean of Students Office (<https://www.uwsp.edu/dos/Documents/UWS%2014-1.pdf>). This includes knowing the difference between plagiarism and paraphrasing, whether summarizing someone else's work in writing or on presentation slides. Individual student work submitted for credit will be your own and not submitted for credit in another course.

Working in groups is encouraged and required for parts of this course. This does not include exams and any collaboration among students on an exam is strictly forbidden. Violation of this policy could lead to failure on the assignment/exam, failure of the course, or other disciplinary action at the University level.

Lecture materials and recordings 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.

## **V. Academic Accommodations**

Accommodations for students with disabilities will be made on an individualized basis. Students must register with Disability and Assistive Technology Center to identify and confirm appropriate accommodations. Dr. Keymer will be happy to accommodate, but must be notified of any documented accommodations during the first three weeks of the semester, so that satisfactory arrangements may be provided. Please notify Dr. Keymer immediately if circumstances arise during the semester that change your accommodation needs.

**VI. Anticipated Course Schedule: (Subject to change)**

<i>Date</i>	<i>Lecture topic</i>	<i>Lab activity</i>	<i>Readings</i>
9/07	Course intro	<b>NO LAB</b>	P&C: pp. 1-12
9/09	Hydrologic cycle		P&C: Ch. 3
9/12	Hydrologic cycle	Soil formation and texture	P&C: pp. 137-161
9/14	Watersheds		
9/16	Watersheds		
9/19	Surface waters	Stream discharge	P&C: Ch. 6
9/21	Surface waters		
9/23	Groundwater		
9/26	Groundwater	Water quality	P&C: pp. 13-23, 339-348
9/28	Water use		
9/30	Water use		
10/03	<b>Exam 1</b>	Groundwater principles	P&C: pp. 99-124
10/05	Water quality		
10/07	Water quality		
10/10	Nitrogen and phosphorus	Groundwater-surface water connection	B&W: Ch. 12
10/12	Nitrogen and phosphorus		
10/14	Nitrogen and phosphorus		
10/17	Streams and rivers	Groundwater GIS	P&C: pp. 223-234, 238-247
10/19	Lakes		P&C: pp. 196-214
10/21	Lakes		
10/24	Wetlands	<b>Lab quiz 1</b> Wastewater treatment	P&C: Ch. 9
10/26	Soil composition		B&W: Ch. 1
10/28	<b>Exam 2</b>		
10/30	Soil composition	Soil profile description	B&W: Ch. 2
11/02	Soil formation		
11/04	Soil formation		
11/07	Soil classification	Soil water and heat	B&W: Ch. 3
11/09	Soil classification		
11/11	Soil physical properties		
11/14	Soil physical properties	Watershed GIS	B&W: Ch. 4
11/16	Soil water		
11/18	<b>Exam 3</b>		
11/21	Soil water	<b>NO LAB</b>	
11/23	<b>NO CLASS</b>		
11/25	<b>NO CLASS</b>		
11/28	Soil temperature	Soil physical properties	B&W: Ch. 8
11/30	Soil CEC		
12/02	Soil CEC		
12/05	Soil CEC	Soil cation exchange capacity	B&W: Ch. 9
12/07	Soil pH		
12/09	Soil pH		
12/12	Soil biology	<b>Lab quiz 2</b>	B&W: Ch. 10
12/14	Soil organic matter	Soil survey and land use	B&W: Ch. 11
12/19	<b>Exam 4</b>		

*\*Pennington & Cech (P&C), Brady & Weil (B&W)*