

## **NRES 251 Spring 2019 - Introduction to Soil and Water Resources**

Location: Lecture – Tu, Th, F at 9:00am, TNR 170; Lab sections TNR 262

Instructor: Ronald Crunkilton, Professor of Water Resources, rcrunkil@uwsp.edu 346-4509  
Office hours: M 9-11, and any other times arranged.

### COURSE DESCRIPTION

Integrated concepts of soil and water resources at the landscape level. Physical, chemical, and biological interactions relating to watershed processes and response to land use and management.

### COURSE OBJECTIVES

This course is designed for undergraduate students in natural resources. The overall objectives of the course are intended to permit students to:

1. Understand why we need to be good stewards of soil and water resources for all life
2. Understand major threats to soil and water resources
3. Understand how best management practices can reduce impacts of humans on soil and water resources
4. Understand important physical and chemical properties of soil and water needed to best manage these resources
5. Use basic field techniques to measure physical/chemical properties of soil and water
6. Apply EXCEL and GIS in the management of soil and water information

### READING MATERIALS

Text Rental:

Brady, N. C., and R. R. Weil. 2010. *Elements of the Nature and Properties of Soils* – 3rd Edition  
Leopold, Luna B., 1997. *Water, Rivers and Creeks*. University Science Books. Sausalito, CA.

There will be several additional readings listed in D2L.

### LAB

NR 251 lab exercises are found in the lab manual sold in the campus bookstore for \$13.33. The lab schedules will be handed out during lab and also posted on D2L.

### GRADING SCALE

Guaranteed grading scale: 90.00%, 80.00%, 70.00%, 60.00%, A to D, respectively. Plus and minus grade designations extend +/- 2.00 points from these levels. Final averages in the course are rounded to the nearest 0.01 percentage point. Grades are assigned electronically, grade cutoffs are absolute, so every single point counts. For example, 92.01% is an A and 91.89 is an A-. A total of 500 points will be possible, 300 points from tests *on lecture material* and 200 points on *lab assignments and quizzes*. Lecture tests are given in lecture and lab tests are given in lab. Grades are not curved. Although the

overall average of lecture tests are often less than 80%, lab averages have been greater than 80%, bringing the combined overall average for the course to just over 80%, typically.

## COURSE REQUIREMENTS

Exams: Four 100 point one-hour lecture exams in class about every 4 weeks. The first three exams are scheduled for February 15, March 15, April 19 and the fourth scheduled on Monday 5-13-19 during final exam week. Your lowest score from exams 1-3 will be *automatically dropped*. Exam 4 is given during finals week in lieu of a final exam and is worth 100 points as the other tests and covers material presented after Exam 3 and thus is not comprehensive other than questions that may be repeated from the previous test (see next paragraph). The score for exam 4 cannot be dropped as a low score. Exam grades are posted to d2l.

All lectures exams will be 40 multiple-choice questions. Each test after the first exam will include up to four questions (10% of the total points for the test) taken verbatim from the previous exam. Lecture tests do not include any mathematical calculations, but lab tests do (see below). Questions and answers to exams will be returned within two weeks after each exam date.

Review: There will be an optional one-hour question and answer period generally offered the day prior to each test.

No-makeup exam policy. Missed exams cannot be made up without prior approval for excused absences. Students with unexcused absences will not be permitted to make up exams, but that test score (0) will then be dropped as the low score for exams 1-3. Excused absences might include NCAA athletic games or meets, student sickness and emergencies in the immediate family.

Testable material comes directly from lecture. Most lecture note outlines are provided in PowerPoint and posted to D2L for your use. However, some material is only presented on the white board and most of the understanding of this material for which you are responsible is only presented verbally in lecture. *Therefore, your own notes of lecture material are the best record of what you are responsible for on lecture exams.* Regular attendance and attention to lecture material is central to doing well in this course. So get your money's worth and best possible grade by regularly attending lecture and taking good notes!

Lab 200 points, Written assignments ranging from 5-15 points (100 points total) assigned in lab are due the following lab period. Lab assignment questions will generally be handed out in lab or sent out by email after class. Penalty for late assignments: Reduced credit will be given for any assignment handed in after the due date unless permission has been granted prior to the due date. The penalty for late assignments is at the discretion of the lab instructor. Remember, late is better than never as a 0 is assigned for missing assignments. Two exams (50 points each) will also be given in lab covering just lab material, one near the middle of the semester and one during the last week of the semester. Lab exams include calculations similar to those from assignments or exercises covered in lab.

Policy on lab attendance: Attendance is mandatory. There are no scheduled makeup labs and it is difficult to make up the material in a meaningful way. If you cannot attend your lab session, you may on occasion arrange to attend another lab session with permission of both lab instructors, but you are responsible for completing and turning in any assignments to your normal instructor by due dates for

the lab section for which you are officially enrolled. Although all labs cover the same material, individual instructors make up their own lab assignments and lab tests.

### EXTRA HELP

Help is also available in the following ways: (1.) meeting with the instructor(s) and or course assistant during scheduled office hours or by appointment (2.) asking questions prior to, during or right after class (3.) email exchange with instructor, (4.) tutoring. Thus, there are many opportunities to get any extra help you may need to succeed in this course. Please do not hesitate to ask for help.

### EXCEL SPREADSHEET AND GIS APPLICATIONS

Some of the laboratory exercises will require spreadsheet (graphing and calculations) and GIS map production and data analysis. We assume students have no experience in GIS so all aspects needed to complete the assignments will be covered in class. This is not true for EXCEL as we assume you have at least a basic understanding of this spreadsheet program. However, your lab instructor or I will be happy to assist with EXCEL graphing if you ask for help. It is best to upgrade the software on your personal computers to coincide with the version of EXCEL used on campus if you plan to use files on both home and campus computers.

### OTHER EXTRA CREDIT

Students will have the opportunity to potentially obtain approximately 10 extra credit points by hand texturing unknown soils in labs. Other opportunities (generally 10-15 points) for extra credit in lecture will arise during the semester. These entail attending presentations by outside speakers or reviewing a video and hand writing a short summary. These potential opportunities will be announced in lecture and by email. Remember your final grades are rounded to the nearest 0.01 percentage point and the grading scale is fixed. Take advantage of every opportunity for extra credit points as one extra point (out of 500) can change your grade! There is no penalty for not attempting or not earning any extra credit points. The extra credit points are simply added to your point total at the end of the semester.

### LECTURE TOPICS AND READINGS

*Importance of soil and water*; Brady Chapter 1

*Review of elementary atomic structure*; See "Atoms" file on D2L

*Soil forming factors*; Brady Chapter 2

*Soil physical properties*; Brady Chapter 4

*Soil water and atmosphere*; Brady Chapter 5

*Soil fertility*; Brady Chapters 8, 12

*Soil biology and organic matter*; Brady Chapter 11

*Soil erosion and best management practices*, PowerPoint slides

*Introduction to water/chemical and physical properties*; Brady Chapter 6 pp. 165-167; Leopold, pp. 3-16; Berner "An important and unique substance" 11p. on D2L

*Rivers*; Leopold, pp. 39-52, 59-117

*Lakes and water chemistry*; Shaw "Understanding Lake Data" 20 p. on D2L

*Groundwater pollution*; Leopold, pp. 17-33; Brady Chapter 6, pp 182-185

## **Keys to success in NR 251(and life in general)!!!**

- 1. Show up.**
  - 2. Become actively engaged in the material.**
  - 3. Give it your best effort.**
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**The following statement and principles of professionalism were unanimously endorsed by the faculty and staff of the College of Natural Resources in the Spring of 2014. Your development as a professional has already begun. Be cognizant that your actions today and interactions with others will have a profound influence on your personal and professional career aspirations.**

### **University of Wisconsin Stevens Point College of Natural Resources-Principles of Professionalism**

**The College of Natural Resources at the University of Wisconsin – Stevens Point prepares students for success as professionals in many fields. As a professional, there are expectations of attainment of several personal characteristics. These include:**

#### **Integrity**

**Integrity refers to adherence to consistent moral and ethical principles. A person with integrity is honest and treats others fairly.**

#### **Collegiality**

**Collegiality is a cooperative relationship. By being collegial you are respecting our shared commitment to student education through cooperative interaction. This applies to all involved in the process: students, staff, faculty, administration and involved community members. You take collective responsibility for the work performed together, helping the group attain its goals.**

#### **Civility**

**Civility refers to politeness and courtesy in your interactions with others. Being civil requires that you consider the thoughts and conclusions of others and engage in thoughtful, constructive discussion to express your own thoughts and opinions.**

### Inclusivity

**Inclusivity** requires you to be aware that perspective and culture will control how communication is understood by others. While many values are shared, some are quite different. These differences in values should be both considered and respected.

### Timeliness

**Timeliness** is the habit of performance of tasks and activities, planned in a way that allows you to meet deadlines. This increases workplace efficiency and demonstrates respect for others' time.

### Respect for Property

**Respect for property** is the appreciation of the economic or personal value an item maintains. Maintaining this respect can both reduce costs (increase the operable life of supplies and equipment) as well as demonstrate respect for others rights.

### Communication

**Professional norms in communication** require that you demonstrate the value of your colleagues, students, professors or others. The use of appropriate tone and vocabulary is expected across all forms of communication, whether that communication takes place face to face, in writing or electronically.

### Commitment to Quality

**Quality** is the ability to meet or exceed expectations. By having a commitment to quality, we intend to provide a learning environment that is conducive to learning. Intrinsic to this commitment to quality is defining expectation (committed to in a syllabus through learning outcomes), implementation (with quality control in place) and assessment (where meeting of learning outcomes is determined).

### Commitment to Learning

**Learning** is a lifelong process. By being committed to learning you are providing a model for all to follow. This model is not only professor to student but involves all combinations of people within our university and broader community.