

COURSE SYLLABUS
SOIL2110: SOILS
SPRING SEMESTER 2021

Instructor: Dr. Nicole Pietrasiak

Office hours: Virtually using the ZOOM link posted at our CANVAS Homepage

Mo 2.30 - 3.30 pm or by appointment

Email: npietras@nmsu.edu

CLASS SCHEDULE:

When: M, W, F, Jan 22 – May 15 at 9:30 - 10:20 am – with both asynchronous and synchronous content.

Delivery method: Hybrid (more than 90% of face-to-face instruction is replaced with virtual content)

Where: Class meets during assigned class time virtually at least once a week on ZOOM (synchronously). Very occasionally we will meet in person in outdoor classrooms in small groups (not more than 6 people at a time). There always will be alternative options for these selected few “in person” meetings to accommodate everybody taking this class. Please check the CANVAS calendar and CANVAS announcements for specifics.

Window of Early Performance Grades: Mar 5-9

Holidays on: Spring Break Mar 23; Spring Holiday Apr 2

COURSE OVERVIEW: Soil is a reusable, but not necessarily renewable natural resource that can store water and nutrients to support vegetation as well as decompose and recycle waste materials and contaminants. Soil comprises the critical zone where the hydrosphere (water), atmosphere (gases), lithosphere (rocks and minerals), and biosphere (organisms) all intersect and interact. This course is designed for undergraduate students interested in learning basic soil science and its applications to Environmental Science, Natural Resource Management, Plant Science, and Agriculture.

LEARNING OBJECTIVES: To present a broad overview of the nature and properties of soil. The focus of the course will be towards agronomic and ecological aspects of soils. If you are interested in the engineering uses of soil look up Soil Mechanics classes in the College of Engineering.

General learning goals:

- 1) Distinguish major types of soils based on their physical, chemical, and biological properties.
- 2) Gain a basic understanding of soil formation including the factors and processes that shape soils.
- 3) Understand how soils influence our lives and the environment.
- 4) Describe and explain why soil is often called the “critical zone” as the interface of the atmosphere, geosphere, hydrosphere and biosphere.
- 5) Apply learned concepts to real world problem sets.
- 6) Interpret data from scientific graphs and tables.
- 7) Develop and apply advanced skills in oral and written communication.

Specific learning goals and objectives will also be stated in the beginning of every module corresponding to the book chapters, and can be found on the first slides in the lecture notes for each module.

TEXTBOOK AND OTHER MATERIALS: *Elements of the Nature and Properties of Soils*, Brady, N.C. and Weil, R.R. (3rd or 4th edition preferred but accept any edition) Prentice Hall. New and used textbooks are available at the NMSU Bookstore or online. Due to the ongoing COVID-19 pandemic

we unfortunately cannot offer any books on reserve NMSU Libraries. You'll also need a scientific calculator (e.g., TI-30).

CANVAS AND REQUIRED TECHNICAL SET-UP: If you are registered for this class, you will have access to course material and grades posted on CANVAS (see "Learn.nmsu.edu/Canvas" under "Launchpad" from the My.NMSU.edu homepage). I will post lecture material, reading assignments, example calculations, quantitative assignments, links to useful sites and tutorials, as well as other material. You will need to be able to regularly obtain access to an internet connection to interact with CANVAS content, receive or request feedback from me, as well as communicate with your peers. If computer and internet access is a problem, let me know immediately so that other arrangements can be made to facilitate your learning. For technical help see <https://learn.nmsu.edu>.

ATTENDANCE: This class will be offered as a hybrid course (HY) with lecture content being posted as online learning modules in CANVAS. Additionally, we will meet once a week synchronously. During these weekly class meetings, I will apply active learning activities and a flipped classroom approach. Thus, working through the lecture modules and subsequently attending and participating in our weekly class meeting are vital if you want a good grade. My goal is to keep you engaged and learning. In order to accomplish this, everyone has to come to each class prepared, having reviewed the assigned material in advance. The benefits of active learning exercises depend on your showing up, participating and being prepared. I also encourage you to ask questions pertaining to the content especially when something is unclear. I may not always have an answer, but will try my best to point you in the right direction or refer you to additional resources. According to the NMSU Advising website: "Estimated study time per credit in addition to assigned class times during a 15-week semester is 2-3 hours per week for each enrolled credit."

GRADING:

Reading Assignments	20%
Take Home Assignments	40%
In-class Exercises	10%
Discussion Forum Postings	10%
Online/Face-2-Face Attendance and Participation	20%
Total	100%
Extra Credit	5%

A+	>99%	B+	87-89.95%	C+	77-79.95%	D+	67-69.95%
A	93-98.95%	B	83-86.95%	C	73-76.95%	D	63-66.95%
A-	90-92.95%	B-	80-82.95%	C-	70-72.95%	D-	60-62.95%
						F	<60%

GRADE DISPUTES: If you feel that graded material (assignment, activity, or quiz) has been incorrectly tallied, please bring it to my attention immediately. If you have a disagreement with the amount of partial credit you receive on an assignment or during an activity, etc., **explain your case in writing** and submit it to me by email **within one week** of the return of your work. Include your original assignment work. You only get full credit if you answer the entire question.

GRADE POSTING: Grades will be posted on Canvas. Because Canvas does not count dashes in your calculated grade, there are zeros in all of your assignments until the grade is posted. To comply with FERPA laws, all students **are required** to use their **NMSU email accounts** for contact and information about grades or other sensitive information.

EXAMS AND QUIZZES: THERE WILL BE NO EXAMS IN THIS CLASS!!! YAY! Except for the first take-home quiz, a small set of **quiz questions** will be integrated in the recorded lectures and count towards your participation grade. Questions will reflect the reading material as well as material presented in previous lecture material. I will also incorporate 1-2 questions throughout lecture to enhance learning. Quizzes can be retaken as many times as desired. Assignments are take-home and will have an assortment of questions including compare/contrast, interpreting graphs, short answers, essay questions, and calculations. Since I will administer **take-home assignments**, no make-up assignments are given. All work, including conversions and proper units, must be shown with the answers in order to earn full credit. Also, I must be able to read your writing, so please **write neat and legibly**. If I am unable to read your writing you may not obtain all points. Also, everyone will have their own data and thus their own answers to calculations or problem sets. All work for this class will need to be submitted electronically via CANVAS.

LATE ASSIGNMENT POLICY: My goal is to give you adequate time and instruction to complete your assignments. Take note however: Before-class reading are critical for our classroom activities and discussions. You will receive **zero points if you fail to submit** the material on time. I may accept a late submission of take-home assignments **up to 4 days after the due date** unless other arrangements are made. However, **20% will be deducted for each day any assignment is handed in late**.

READING ASSIGNMENTS: A flipped class approach requires you to study the reading material and complete the recorded lecture content, so that you have the necessary background information to build on during the synchronous in-class activities. The reading assignments are designed to guide your reading and focus you on the essential content. Reading assignments are due before the next module and before our weekly synchronous class meeting. They are to be submitted via CANVAS. Reading assignments will be announced in CANVAS.

EXTRA CREDIT: Occasionally there will be opportunities to present in class, attend seminars, help with outreach activities, etc., that may provide some bonus learning opportunities and “extra credit”. These will be announced in class and posted on Canvas along with the requirements needed to receive credit. If you have suggestions for such activities, please let me know via email and include all the details. Cumulative extra credit can comprise up to 5% of your class letter grade.

HYBRID CLASSROOM ATMOSPHERE: My goal is that everyone in the class, including myself, will be treated with respect and dignity – this goal applies to our online presence and the occasional face to face meetings. I will try my best to make our class an enjoyable and worthwhile investment of your time and energy. I expect you to do your part by studying, coming to synchronous meetings prepared, and actively participating in class. I sincerely hope that you will gain an appreciation, if not love, for soils and soil science by the end of this course.

CLASSROOM COVID-19 SAFE PRACTICES: COVID-19 is a disease that spreads primarily from person to person. Therefore, all employees, students and visitors are expected to take personal responsibility for their own health, help protect the health of others, and keep the Aggie community safe from the spread of COVID-19 and other infections. To minimize the risk to public health presented by the spread of COVID-19 while working and learning at NMSU, students are expected to adhere to the expectations outlined in the Crimson Commitment Classroom COVID-19 Safe Practices Acknowledgement video signed in [My.NMSU.edu](https://my.nmsu.edu).

SYLLABUS STUDENT RESOURCES & POLICIES: Please visit <https://provost.nmsu.edu/faculty-and-staff-resources/syllabus/policies> for university policies and student services, including Discrimination

and Disability Accommodation, academic misconduct, student services, final exam schedule, grading policies and more.

ANTICIPATED LECTURE TOPICS

Ch. 1: Soil composition and importance as a natural resource (general information, overview of soils, functions of soil)

Ch. 2 – 3: Soil origin and development (parent material, weathering, soil-forming factors, profile, classification, taxonomy, soil orders, soil survey)

Ch. 4: Soil physical properties (texture, structure, density, pores, color, temperature, water holding capacity, tillage)

Ch. 5 – 6: Soil water (infiltration, percolation, root uptake, energy concepts, hydrologic cycle, water quality, drainage, irrigation),

Ch. 7: Soil aeration and temperature (wetlands, gas exchange, oxidation-reduction, thermal properties)

Ch. 8: Soil colloids (clays, mineralogy, charge, cation exchange capacity, anion exchange capacity, sorption)

Ch. 9: Soil pH (acid soils, alkaline soils, amendments to modify pH, soil salinity, sodicity, reclamation)

Ch. 10: Organisms and ecology of the soil

Disclaimer: I may modify this syllabus and lecture topics during the semester as necessary to maintain the course objectives.

SOIL 2110L: The lab is a separate 1 credit course that is only required for certain majors. See your advisor if you are unsure whether you are required to take it. It's a fun hands-on experience that helps explain many of the lecture concepts, so I encourage you to enroll if you have the time and interest.