



Soil 2110 Laboratory Spring 2022



Time (Location) –

Wednesday 1:30 – 4:00 PM (Skeen W122)
& Thursday 1:30 – 4:00 PM (Skeen W122)

Teaching Assistants:	Sundar Sapkota	Anthony Schaefer
Office:	Skeen N257	Skeen N333
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Office Hours:	Friday 2 PM - 3 PM or by appointment	Tuesday 11 AM- 12 PM

Course Objectives: *Let's dig deeper and discover more...* This course is designed to give the student a broad overview of the nature and properties of soils through hands-on laboratory exercises and field experiences. The goal is to give the student a better appreciation of the soils that exist around them. Students will work individually or in small groups (as specified by the instructor) in class to complete each laboratory exercise during the assigned class period.

Learning Objectives:

- Learn techniques for *sampling and characterizing soils* in the region.
- Understand *how soils are formed and the processes* that occur within the soil profile.
- Gain fundamental knowledge on *soil physical, chemical, and biological properties* and how each can influence the overall function of a particular soil.
- Develop *critical thinking and analytical skills* within laboratory and field settings.
- Encourage collaboration, inclusiveness, and critical thinking.

Textbook and Course Expectations:

- There is no required textbook for this lab course. A laboratory manual/handout for each lab will be posted on Canvas (<https://learn.nmsu.edu/>) one week before the assigned laboratory. Students are expected to read the lab handout **prior** to the lab meeting.
- Each week students will perform laboratory activities individually or in a group of 2-4 people.
- Students will also be required to submit lab reports for appropriate labs. The evaluation and discussion of results in laboratory reports should be different for each student and should be submitted individually and not in groups. Students must independently complete quizzes and the final project.
- The lab page on Canvas is separate from the SOIL 2110 lecture course page.

Attendance: Attendance is mandatory. If you know you will need to miss a lab, for a valid reason, contact the lab TA for your section: Sundar Sapkota (ssapkota@nmsu.edu) or Anthony Schaefer (aschae@nmsu.edu) AND Dr. Nicole Pietrasiak (npietras@nmsu.edu) to see what arrangements can be made to make it up or to attend the other section. This lab course includes field trips, and you should wear appropriate clothing (hats, rugged footwear, sunscreen, etc.) and bring water as we will be spending around 2.5 hours in the sun for few field trips. Due to COVID-19 related public health guidelines (PHO) students will need to wear masks at all the times which includes

the field visits. Please inform your TA and course instructor as soon as possible if you unable to follow PHO.

Grading: SOIL 2110L is a separate class from SOIL 2110. Grades in one class do not influence the other. The lab is designed to support the lecture and will be coordinated with the lecture class as much as possible.

10 Quizzes (10 points each) + 1 Final Quiz (50 points)	150 points
10 Lab Activities (20 points each)	200 points
Combined Lab Reports (mid-term & final) 50 points each	100 points
Participation in Discussion Boards	30 points
Final Project Presentation	100 points
Participation	20 points
Total	600 points

Quizzes: Each quiz is worth 10 pts and will include any information presented during the previous week's lab as well as preparatory questions from the handouts related to the current lab. Quizzes will be available to complete on CANVAS.

Lab Activities and Lab Reports: Lab activities will be done in groups and will allow you to enhance your collaboration skills. Points will be given based on participation and attendance. Making personal calls or texting during class time will result in a zero for that day's points. Two comprehensive lab reports (one including all labs completed before mid-term and the other including all labs completed after mid-term) should be submitted for this course. The guidelines for lab report will be provided on Canvas.

Writing Assignments: Writing assignments will contain guided response questions, critical thinking scenarios, calculations, and evaluations of lab activities. Assignment content is to be determined, and grades will reflect mastery of knowledge and thoughtful responses.

Final Project Presentation: This presentation will be based on the Soil Biology Lab. The student will work on their own throughout the semester and will give a presentation at the end of semester.

Format: Formatting for any written responses includes name, date, and lab section in the header; 12-point Times New Roman font, 1.5 spacing, and one-inch margins.

Late Assignments: Late assignments will be accepted up to 4 days after the due date. However, 15% reduction will be applied for each day late submission. Please inform your TA of your late submission.

Note: All work in the course must be turned in **ELECTRONICALLY ON CANVAS.**

- **Carry a notebook as we will be talking about the labs and making observations in the field sites. Recording your observations will be the key to write the discussion for your lab reports.**
- **All the important information will be announced on Canvas.**

Title	Date	What to expect?
Lab 1: Icebreaker and Introduction to Soils	1/19; 1/20	Icebreaker; Course objectives and overview; Basic concepts: Soil and its importance, processes and formation, sampling techniques
Lab 2: Soil Survey & Field Trip: Soil sample collection from managed agricultural farm and unmanaged site	1/26; 1/27	<i>Quiz 1 (10 points)</i> Soil sampling at two different locations; determine soil gravimetric water content in lab
Lab 3: Field Trip: Parent Material & Soil Formation (Dripping Springs)	2/2; 2/3	<i>Quiz 2 (10 points)</i> Soil formation: factors and processes; Observations at field site
Lab 4: Soil Texture	2/9; 2/10	<i>Quiz 3 (10 points)</i> Determine soil texture by hand/feel and hydrometer method.
Lab 5: Bulk Density	2/16; 2/17	<i>Quiz 4 (10 points)</i> Determine bulk density of tilled and compacted soils using soil cores.
Lab 6: Field Trip: Soil Morphology (Leyendecker)	2/23; 2/24	<i>Quiz 5 (10 points)</i> Characterizing soil profile for horizonation, structure, consistency, color etc.; Soil site characteristics and effervescence test
Lab 7: Soil Biology	3/2; 3/3	<i>Quiz 6 (10 points)</i> Prepare and manage two pots (Sterilized soil Vs. Living soil). Students will plant seeds and observe seedling growth and overall health weekly.
<i>SPRING BREAK</i>	3/7-3/10	
Lab 8: Soil aggregate stability	3/16; 3/17	<i>Quiz 7 (10 points)</i> Determine soil aggregation by soil aggregate test kit method and slake test.
Lab 9: pH and EC (soluble salts)	3/23; 3/24	<i>Quiz 8 (10 points)</i> Acidity, classifying salt affected soils, soluble salts and electrical conductivity of soils.
Lab 10: Soil Fertility	3/30; 3/31	<i>Quiz 9 (10 points)</i> Soil nutrients; Calculation based on fertilizer doses and nutrient requirement
Lab 11: Soil Health	4/6; 4/7	<i>Quiz 10 (10 points)</i> Understanding soil health indicators. Field trip to Soil health laboratory, Leyendecker
Lab 12: Soil Biology Presentation	4/13; 4/14	In form of <i>class presentation (100 points)</i> – Power point presentation summarizing the results and what you learned while completing the Soil Biology Lab.
Final Quiz	4/20; 4/21	<i>Final Quiz (50 points)</i>

Grades in this course are assigned *without* Fractional Grading. Your final letter grade will be determined according to the following scale:

Percentage of possible points earned	Final grade
90-100%	A
80-89%	B
70-79%	C
60-69%	D
≤59%	F

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.

Disclaimer: The schedule is subject to change due to weather, availability of equipment or field sites. Students will be notified of any changes via email and posted on Canvas.

