

# SOIL 312

## SOIL MANAGEMENT AND FERTILITY

### Spring 2022

**INSTRUCTOR:** William C. Lindemann, Emeritus Professor of Soil Microbiology and Environmental Science (575-639-1145). My academic interests are in the area of soil microbiology. I am more interested in soil processes manipulated by soil microorganism than in identification of the specific organisms. Research interests are in the manipulation of nutrients and other compounds by soil microorganisms, particularly in an agronomic/horticultural setting. My research involved the ecology of microorganisms in desert soils, mine spoil reclamation, nitrogen fixation, decomposition of organic amendments (manure, crop residues, biosolids), microbial manipulation of heavy metals, nitrogen cycling in a variety of cropping situations, and other research concerning soil-plant relationships. Much of the research has been off campus. I was a professor at NMSU for over 36 years and I am still active in professional organizations and as a consultant (formally a certified *Soil Scientist, Agronomist, and Crop Advisor*). I am not an "ecologist" as such, but I am interested in soils as a part of the total environment. In that vein, I believe agricultural/soil management should have as little impact as possible on the environment, and should be sustainable.

**LAB INSTRUCTOR:** Les Boyse (575-571-2208), [lboyse@nmsu.edu](mailto:lboyse@nmsu.edu)) will be in charge of the lab course. I have no formal responsibilities with the course but may go on field trips. A teaching assistant for Mr. Boyse will be assigned to help in laboratory, field, and greenhouse exercises. Keep in mind that **SOIL 312L is a separate course from 312 and has no bearing on the grade in 312. Likewise, SOIL 312 is a separate course from 312L and has no bearing on the grade 312L.**

**OFFICE HOURS:** 321N Skeen Hall; [wbindema@nmsu.edu](mailto:wbindema@nmsu.edu); Office Hours are 8:30-10:00 am T/TR for in person appointments. However, I will not be in my office at other times unless an appointment is made in advance. Appointments at other times can be arranged but I am not a full time employee, now live in El Paso, and do not want to come to campus unless there is a need. If there is a need, I will be here. It may be easier to contact me at my cell phone 575-639-1145. Email is often easier for me. **Do not use the Canvas email system,** use my email address above.

**CODE OF CONDUCT:** Please see the Student Code of Conduct in The Student Handbook: (<https://arp.nmsu.edu/5-10/>) Pay particular attention to III. B. Academic Misconduct. Academic misconduct will not be tolerated and will result in severe penalties including an F in the class. For a definition and a description of plagiarism, see the library link at: <http://lib.nmsu.edu/plagiarism/>

**DISABILITIES:** If you have or think you may have a disability that interferes with your performance as a student in this class, you are encouraged for academic reasons to discuss this on a confidential basis with: Student Accessibility Services; (575) 646-6840 in Corbett Center Room 244 or <http://sas.nmsu.edu/>. **If you have a disability, you must make this known to me so that arrangements can be made.** If you have a condition that may affect your ability to exit from the premises in case of emergency, you are urged, for safety reasons, to notify me.

**OBJECTIVES:** The general objective is to relate soil management to plant growth with the focus on soil fertility and chemical properties. Soil fertility will make up approximately 65% of the course with the remainder on other soil management properties and basic soil-plant relationships. I will bring in practical applications based on my experiences in the field and lab. Much of what I teach can be directly used in the field/greenhouse/lab.

**FOR WHO INTENDED:** This course is intended for juniors in soils, agronomy, horticulture, turf, agricultural biology, range science, environmental science, biology, and general agriculture. Also, for those intending to become *Certified Soil Scientists*, I will cover several topics and do calculations that you will need for the national certification test that you will not receive in other soil classes. For those interested in becoming a *Certified Soil Scientist* or *Certified Agronomist /Crop Advisor*, please see me and I can help you along the way.

**PREREQUISITES:** SOIL 252. Because SOIL 252 has a requirement of CHEM 1120G, knowledge of general chemistry is required. Because CHEM has a requirement of MATH 1215, algebraic skills are required. You will do assignments that require basic algebra.

**TEXT:** Formal text reading will be from Havlin et al:*Soil Fertility and Fertilizers*. Havlin, Beaton, Tisdale, and Nelson. Pearson/Prentice Hall ISBN Number 0-13-027424-6; other readings may be assigned.

**STUDENT RESPONSIBILITIES:** Students are responsible for coming to class and being prepared to interact with the instructor and other students on the topic. Students are responsible for reading the assignments, retaining the knowledge of the assignments, and discussion of the assignment in class. Students are responsible for doing the written assignments on their own unless otherwise instructed by instructor.

**ELECTRONICS IN CLASS:** Cell phones, computers, I-pods, etc. will be turned off in class. I will ask you to leave if I should find them on. If for some reason you need a cell phone, computer, or other electronic device you must inform me before class. An exception is audio recorders.

**GRADING:**

Two Exams @ 17.5% each	= 35 %
5 Assignments @ 7% each	= 35 %
Quizzes and participation	= 5 %
Final Comprehensive Exam	= 25 %

The grading system will follow a 10% decreasing increment

system: 97-100 = A+

93-96 = A

90-92 = A-

87-89 = B+

83-86 = B

80-82 = B-

77-79 = C+

73-76 = C  
70-72 = C-  
67-69 = D+  
63-66 = D  
60-62 = D-  
< 59 = F

Class participation includes entering into discussions and answering questions from the instructor pertinent to the topic and assignments. **A student cannot participate if they are absent.**

**GRADED ASSIGNMENTS:** Graded assignments make up a significant portion of this class. Similar problems will be on the quizzes and exams; thus failure to understand or do the assignments will result in missed quiz and exam questions as well as the assignment grade. **All work** must be shown with the answers and the answers must clearly show the progressive steps. I encourage you to seek help before assignments are due (this does not mean one hour before class). Late assignments (after 10:30 on the due date) are penalized 5 % / day (including weekends and holidays). After one week, the grade will be a 0. **Students are responsible for doing the written assignments on their own unless otherwise instructed by instructor (see misconduct above).** **This means don't cheat.**