ENVIRONMENTAL SOIL SCIENCE (ES/SOIL- 370, 3Cr)
Spring

Instructor: Dr. Manoj K Shukla Professor of Soil Physics 320N Skeen Hall Tel: 575-646-2324 Email: shuklamk@nmsu.edu	**Class**: 2:30 PM- 3:45 PM, M, W, Online Office Hours: By appointment

My academic interests are in the area of environmental soil physics. My present responsibilities at NMSU are to conduct research on soil and water, teach courses, service, and advice students. My research group consisting of graduate, undergraduate students, postdoc and technicians is developing strategies for efficient water application, measuring and modeling the soil moisture and soil nitrogen dynamics for efficient irrigation scheduling and determining the water and energy balance of the near surface layer in arid and semi-arid environments. We are also measuring and modeling influences of treated wastewater irrigation on desert soils and indaziflam, commonly applied to pecan orchards as a pre-emergence herbicide, movement through soils. Concentrate coming out of a RO system is a big environmental hazard. We are designing strategies for sustainable use of concentrate for agriculture.

You may also contact me by email (preferred) or phone. According to university policy, all email communications between student and professor will be on the university email (name@NMSU.edu). Please go to this URL for most up to date policy

https://provost.nmsu.edu/faculty-and-staff-resources/syllabus/policies.html

CODE OF CONDUCT: Please see the Student Code of Conduct in The Student Handbook: (http://deanofstudents.nmsu.edu/student-handbook/1-student-code-of-conduct/index.html) Pay particular attention to III. B. Academic Misconduct. Academic misconduct will not be tolerated and will result in severe penalties including an F grade in the class. For a definition and a description of plagiarism, see the library link at: http://lib.nmsu.edu/plagiarism/. For more information, please also read https://provost.nmsu.edu/syllabus-resources/.

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: University Disability Services/Student Accessibility Services; (575) 646-6840 (voice); (575) 646-1918 (TTY/TDD);(575) 646-5222 (Fax) in Corbett Center Room 244 or go to http://www.nmsu.edu/~ssd/ . 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: This is a required class for the students majoring in Environmental Sciences. The general objective of the class is to connect soil science to the environmental and pollution problems. These problems include contaminant transport and remediation, soil erosion, particulate matter emission into the atmosphere, and mining and reclamation. Linkage between soil properties and environmental problems will be discussed via PowerPoint presentation, numerical problems, videos, models, and lab exercises. Topics that will be discussed include, units and dimensions, soil properties, solute transport, contaminant transport, soil contamination

and remediation, soil erosion, water and wind erosion, models, mining and reclamation, soil salinity, alkalinity, and impact on productivity.

By the end of semester, students will: (a) have clear understanding of several contaminants and their methods of remediation, (b) be better equipped to design a remediation plan based on transport mechanisms discussed in the class, and (c) have a clear understanding of the various direct and indirect costs (consequences) associated with poor soil and water management.

FOR WHO INTENDED: This course is intended for juniors in environmental science, soils, agriculture, biology, geology, range, chemistry, engineering, and related fields.

PREREQUISITES: SOIL 252

TEXT: Formal text reading may be from Brady (below) and possibly reserve materials at the library. You may be responsible for reading assignments from several books and articles at the library. However, much of the material will not be in a formal text.

Elements of the Nature and Properties of Soils. Abridged edition of Brady and Weil, 2004. Prentice Hall

Other Books on: *Soil Physics an Introduction*, *Soil Erosion, and Environmental Soil Science*

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 reading assignments, retaining the knowledge of the reading assignments, and discussion of the reading assignment in class. Students are responsible for doing their graded assignments on their own and turning in the assignments on time. The penalty for late assignments is 5% of grade per day, after a 7 days a 0 will be given. If a group assignment is assigned, students will actively participate with others in their group and pull their own weight within the group.

Formally, there are no excused absences. However, if you have a legitimate reason for not being in class (particularly when an assignment is due or an exam is given), you may take the exam or turn in the assignment early or late with instructor's consent.

GRADING:

Assignments = 75%

Class participation = 5%

Comprehensive Final Exam = 20%

Exams (homework assignments) could be short answer, essay, or comprehensive in nature. Exams will cover class notes, reading and graded assignments, class discussion, videos, and any handout material. Written assignments will be neatly typed in a professional manner. Calculation assignments will show all calculations in a neat, easily followed progression of thought. Oral assignments will include professional level preparation and delivery. Class participation includes entering into discussions and answering questions from the instructor pertinent to the topic and assignments.

My grading system is below with the new +- system added:

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	

TEACHING STYLE: I will present material in a formal classroom lecture. However, I encourage discussion and class participation. I will upload the PowerPoint slides as pdf on the CANVASS.

Title	Details	Reading source
Units and Dimension	Systems of units and dimension, Importance and uses	Soil physics an introduction, lecture note
Home-work 1	Due on see Canvas	
Contaminants	Types, processes, breakthrough times	Soil physics an introduction, lecture note
Remediation	Techniques, videos, case studies	On-line, PowerPoints
Home-work 2	Due on see Canvas	
Soil Erosion	Types, mechanisms, processes, models, case studies	On-line, PowerPoints, Nature and properties of soil
Home-work 3	Due on see Canvas	
Mining and reclamation	Surface mining and reclamation act, processes, advantages, case studies	Lecture note, Online
Soil Salinity and sodicity	Definition, problem, solutions	Online, PowerPoint, Nature and properties of soil
Home-work 4	Due on see Canvas	
Revision and preparation	for FINAL EXAM	
Final Exam in May	Decided by NMSU scheduling	

Note:

1. ~~There will be two labs and dates and times for both will be decided after consulting with students.~~
2. Instructor can make changes to the syllabus and that students will be notified in class about such changes
3. Homework is based on the material discussed prior to the due date but not already included in a previous homework assignment.

Requirements for all syllabi

Academic Misconduct

Academic and non-academic misconduct: The Student Code of Conduct defines academic misconduct, non-academic misconduct and the consequences or penalties for each. The Student Code of Conduct is available in the NMSU Student Handbook online: **http://studenthandbook.nmsu.edu/**

Academic misconduct is explained here:
http://studenthandbook.nmsu.edu/student-code-of-conduct/academic-misconduct/

Discrimination and Disability Accommodation

Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act Amendments Act (ADA) covers issues relating to disability and accommodations. If a student has questions or needs an accommodation in the classroom (all medical information is treated confidentially), contact:

Main Campus

Student Accessibility Services (SAS)
Corbett Center Student Union Room 208
Trudy Luken, Director
575-646-6840
sas@nmsu.edu

New Mexico State University, in compliance with applicable laws and in furtherance of its commitment to fostering an environment that welcomes and embraces diversity, does not discriminate on the basis of age, ancestry, color, disability, gender identity, genetic information, national origin, race, religion, retaliation, serious medical condition, sex (including pregnancy), sexual orientation, spousal affiliation, or protected veteran status in its programs and activities, including employment, admissions, and educational programs and activities. Inquiries may be directed to the Laura Castille, Executive Director, Title IX and Section 504 Coordinator, Office of Institutional Equity, P.O. Box 30001, E. 1130 University Avenue, Las Cruces, NM 88003; 575.646.3635; 575-646-7802 (TTY); equity@nmsu.edu.

Title IX prohibits sex harassment, sexual assault, intimate partner violence, stalking and retaliation. For more information on discrimination or Title IX, or to file a complaint contact:
Laura Castille, Executive Director and Title IX Coordinator
Office of Institutional Equity (OIE) - O'Loughlin House, 1130 University Avenue
Phone: (575) 646-3635 E-mail: equity@nmsu.edu
Website: http://equity.nmsu.edu/

Other NMSU Resources:

NMSU policy prohibits discrimination on the basis of age, ancestry, color, disability, gender identity, genetic information, national origin, race, religion, retaliation, serious medical condition, sex, sexual orientation, spousal affiliation and protected veterans status.
Furthermore, Title IX prohibits sex discrimination to include sexual misconduct: sexual violence (sexual assault, rape), sexual harassment and retaliation.
For more information on discrimination issues, Title IX, Campus SaVE Act, NMSU Policy Chapter 3.25, NMSU's complaint process, or to file a complaint contact:
Gerard Nevarez, Title IX Coordinator
Agustin Diaz, Title IX Deputy Coordinator
Office of Institutional Equity (OIE) - O'Loughlin House, 1130 University Avenue
Phone: (575) 646-3635 E-mail: equity@nmsu.edu
Website: http://eeo.nmsu.edu/

Other NMSU Resources:
NMSU Police Department: (575) 646-3311 www.nmsupolice.com
NMSU Police Victim Services: (575) 646-3424
NMSU Counseling Center: (575) 646-2731
NMSU Dean of Students: (575) 646-1722