Environmental Soil Science — Syllabus

SPSS 2120, Spring 2018

I. **Instructor:** Dr. Cristian P. Schulthess
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Phone: 486-1943
Email: c.schulthess@uconn.edu Do see me, call me or email me with your questions, as needed.
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II. Course Description:

Second semester. Three credits. Three class periods. Prerequisite: CHEM 1122, 1127 or 1147. Open to sophomores or higher. Introduction to the physical, chemical and biological properties of soils. The relationship between soils and the growth of higher plants. Impact of soils on environmental quality.

III. **Class Schedule:** M, W & F 12:20 – 1:10 pm, WBY 327.

IV. **Textbook:** The Nature and Properites of Soils, 14th Edition, by Nyle C. Brady and Ray R. Weil, Prentice Hall, Upper Saddle River, New Jersey. 2008.

V. **Exams, quizzes, reports and homework:** There will be 4 exams. The final exam is not a cumulative exam. See the "Class Outline" for the list of days when these exams are scheduled. There will be short quizzes nearly every day (that is, from 1 to 3 per week). Homework assignments are also given out throughout the semester.

You also need to submit four one-page (300 to 500 words), typed reports on the topics indicated below. The due dates are also indicated below. You must work independently on these reports. Be sure to properly cite all of your references.

Environmental Soil Science Problems for your reports:

Due Feb. 24: The risk of forest fires is high in your community in Alabama. The logging industry is concerned about how these fires might impact the forest soils. Describe how Alabama forest soils are impacted by fire.

Due Mar. 24: Although it rains on occasion in Texas, the rains do not infiltrate the soil very fast. Serious flash floods result. Describe what parameters impact infiltration rates in Texas soils.

Due Apr. 14: There is a shortage of water in your Napa Valley vineyard, but you need water to grow grapes for the California wine industry. Salt concentrations and soil pH values are a concern. Describe how various irrigation methods and alternate water sources will impact your soil chemical and physical properties.

Due May 2: Large volumes of light weight oil in an above ground storage tank has leaked into the surrounding soil in your old mill located in Tolland County, CT. Describe how the oil moves through the soil and the sandy subsoil layers, and how the average rainfall patterns of CT may impact its movement through the soil. The leaking condition has gone unchecked for decades. It was recently discovered.

VI. **Late Policy & Emails:** All assignments are due by 1:10 pm in class unless other arrangements are made in advance. Assignments received after this time but before 6 pm of the due date will receive a 1 point penalty. Assignments received after 6 pm but before 9 am the next morning will receive a 3 point penalty. Assignments received after 9 am the next morning but before 5 pm the next day will receive an 8 point penalty. NO ASSIGNMENTS WILL BE ACCEPTED after 5 pm the next day.

Assignments sent to me via email will receive a 1 point penalty unless a logical reason is given to me and agreed to by me prior to the due date. I do not like homework or term papers sent to me via email unless I specifically ask for it to be given to me that way. I am not your printer nor your secretary.

VII. **Missed Exam Policy:** All missed exams must be made up prior to your next attendance in class. All students that miss an exam will not be allowed to return to class until they have taken the exam. A valid excuse for missing the exam on the day it was scheduled must also be supplied.

All students that miss an exam must contacted me somehow prior to the start of the next class to inform me about the missed exam. Contact me by email prior to the start of the next class (the first class following the exam date) if you are unable to attend classes for an extended period of time.

If you know that you will be missing an exam due to some other engagement, please see me prior to the exam day so that an alternate arrangement can be made. All students that miss an exam and tell me about it prior to the start of the next class, will be allowed to make it up in a convenient location, but this make up exam must still be done prior to their next attendance in class.

For example, if you did not take an exam on Monday, and you show up to class on Wednesday, then, guess what, you will take the exam on the spot on Wednesday. DO NOT TELL ME AFTER THE END OF THE CLASS THAT YOU MISSED THE EXAM. INSTEAD TELL ME THIS AT THE START OF THE CLASS. By telling me this information at the start of the class, you will be sent out of the room to take the make up exam on the spot. If you tell me this information at the end of the class (that is, at the end of the next class where you were clearly healthy and able to show up to), then you will be given a zero for the exam grade instead. To avoid conflicts, it is always better to tell me in advance or as soon as you can that you missed or will miss an exam. Call me, email me, leave messages, and do whatever is necessary to make arrangements for your make up exam prior to your next class with me.

VIII. **Grades:** Your grades will be based on your four 100-point exams, plus the points earned from your numerous quizzes and homework assignments. The four reports described above are worth 15 points each. The total number of points varies from year to year because the assignments change according to the details and needs of your particular class. Typically, the total number of points will be between 500 and 600 points. Grades are based on the usual percentages: >90% for A, 80–90% for B, 70–80% for C, 60–70% for D, and <60% for F. Top a of each grade range is (+), bottom a of each grade range is (–).

Soils — Class Outline

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Mondays, Wednesdays & Fridays, 12:20 – 1:10, WBY 327

Dates					Textbook Chapter:
	M	W	F		
Part 1: Describing Soils & Environmental Influences					
Jan.		22	24	Introduction ; Soil Formation Processes	1, 2
	27	29	31		
Feb.	3	5	7	Soil Classification	3
	10	12	14		
	17	19	21		
	24			***EXAM 1*** (Jan. 22 – Feb. 21)	
Part 2: Soil Physics & its Relationship to Environmental Fate & Transport					
		26	28	Soil Physical Properties	4
Mar.	3	5	7	Soil Water	5
	10	12	14	Start of Chapter 6: Evapotranspiration	6.0–6.3 (if time permitting)
	[17	19	21]	---------- *Spring Recess*	
	24			***EXAM 2*** (Feb. 26 – Mar. 14)	
Part 3: Soil Chemistry & Natural Processes					
		26	28	pH, CEC & AEC (pages 333 to 350)	8
	31				
Apr.		2	4	Soil Acidity	9
.	7	9	11	Soil Salinity & Sodicity	10
	14			***EXAM 3*** (Mar. 26 – Apr. 11)	
Part 4: Soil Processes & Environmental Impact					
		16	18	Soil Organic Matter & Global C Budget	12
	21	23	25	Soil Erosion	17
	28	30		Soil Chemical Pollution	18
May			2		
	May 5 to 9			***FINAL EXAM 4*** (Apr. 16 – May 2)	