

# Syllabus

## Fall 2009

**Course:** TPSS/NREM 304 Fundamentals of Soil Science

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### Course Format

Three 50-min. lectures, MWF, 10:30-11:20 AM in St. John 10A, and one 3-hr Lab. Session, Tuesday or Thursday, 1:30-4:30 PM. Laboratory exercises will be held in Sherman 203, and the greenhouse experiment in Pope Lab (greenhouse).

### Course Objectives

1. To gain an appreciation of the fascinating world of soils and see their critical role in sustaining life.
2. To understand how and why different soils behave and perform differently.
3. To apply understanding of soil processes to predict soil behavior and performance.
4. To be able to make environmentally and economically sound soil management decisions.

### Reading Assignments

The recommended text is *Elements of the Nature and Properties of Soils 3<sup>rd</sup> Ed.*, 2008, by Nyle C. Brady and Ray R. Weil. This is an excellent reference text, which should be used to compliment the lectures. On occasion you will also be provided with additional reading material not covered in the text. I recommend that you explore the world wide web for useful and interesting information on soils throughout the world.

### Exams

There will be three exams and a final exam. The exams will cover material for which you have not been previously tested. The final examination will test your overall understanding of soil science.

### Homework and Writing Assignments

Homework assignments will be given on a weekly basis. Assignments will be handed out on Fridays and must be turned in on the following Friday. **No late homework is accepted.** On occasion, the homework assignment may include a lab assignment.

There is one lab report collected for grading. This report is on the outcome of a greenhouse soil fertility experiment. The report should include (1) research objectives, (2) review of literature, (3) materials and methods, (4) results and discussion, and (5) conclusions.

### Grading

<u>Item</u>	<u>Date</u>	<u>Weight</u>
1 <sup>st</sup> Exam	Sept.17	15%
2 <sup>nd</sup> Exam	Oct. 23	15%
3 <sup>rd</sup> Exam	Nov. 20	15%
Final Exam	Dec. 14	35%
Homework	weekly	10%
Lab Report	Due Dec. 9	10%

<b>Schedule of Topics</b>				
<b>Week</b>	<b>Date</b>	<b>Topic</b>	<b>Chapters</b>	<b>Laboratory</b>
1	Aug. 24 Aug. 26 Aug. 28	Importance of Soils Soil Properties Soil Formation	1,2	No Lab
2	Aug 31 Sept 2 Sept 4	Soil Formation Soil Formation Soil Classification	2	Field Trip Manoa 9/1, 9/3
3	Sept. 7 Sept. 9 Sept. 11	<b>No Class – LABOR DAY</b> Soil Classification Soil Classification	3	Using Soil Survey 9/8, 9/10
4	Sept. 13 Sept. 15 Sept. 17	Soil Classification Soil Classification/exam review <b>Exam 1</b>	3	Waiahole 9/15, 9/17
5	Sept. 21 Sept. 23 Sept. 25	Soil Physical Properties Soil Physical Properties Soil Physical Properties	4	Soil Texture 9/22,9/24
6	Sept. 28 Sept 30 Oct 2	Soil Water Soil Water Soil Water	5&6	Soil Water 9/29,10/1
7	Oct. 5 Oct. 7 Oct. 9	Soil Colloids Soil Colloids Soil Colloids	8	Setup Greenhouse Exp't 10/13,10/15
8	Oct. 12 Oct. 14 Oct. 16	Soil Acidity Soil Acidity Soil Acidity	9	Plant Greenhouse Exp. 10/20,10/22
9	Oct. 19 Oct. 21 Oct. 23	Soil Salinity/Alkalinity Liming <b>Exam 2</b>	9	Soil Acidity & Liming 10/6,10/8
10	Oct. 26 Oct. 28 Oct. 30	Liming Soil Organic Matter Soil Organic Matter	11	N Cyling & SOM 10/27,10/29
11	Nov. 2 Nov. 4 Nov. 6	Soil Organisms Microbial Functions Essential Plant Nutrients: Nitrogen	10&12	Soil Organisms 11/3,11/5
12	Nov. 9 Nov. 11 Nov. 14	Phosphorus <b>No Class – VETERAN'S DAY</b> Potassium/Calcium/magnesium	12	N Mineralization 11/10,11/12
13	Nov. 16 Nov. 18 Nov. 20	Micronutrients Micronutrients <b>Exam 3</b>	12	Harvest Greenhouse Expt. 11/17,11/19
14	Nov. 23 Nov. 25 Nov. 27	Fertilizers Fertilizer calculations <b>No Class – THANKSGIVING</b>	13	No Lab
15	Nov 30 Dec 2 Dec 4	Nutrient Management Nutrient Management Soil Quality	13	Soil Testing 12/1,12/3
16	Dec. 7 Dec. 9	Soil Quality Review		TBA
17	Dec. 14	<b>FINAL EXAM (9:45-11-45)</b>		