

# Soils Laboratory

University of Washington Bothell

**Soils Laboratory (BES 417)**

**5 credit hours**

**When:** Winter, 5 Credits

**Locations:** TBD

**Time:** MW 11:00-1:05

**Instructor:** Chuck Henry

**email:** clh@u.washington.edu

**Course website:** <http://faculty.washington.edu/clh/soils.html>

**Purpose:** Soil is the excited skin of the earth! This course is designed to introduce the student to the types of soils analyses that are important to understanding the physical and chemical state of soils around us. The class will include an introduction to soils in general, and particularly local soils.

The class sessions will consist primarily of preparatory lectures and laboratory analyses. We will take field trips: at least one to collect soils for a variety of analyses, and one Saturday field trip to look at a number of different soils influenced by the variety of soil forming factors. Laboratory classes are designed to introduce some of the primary analyses that are used for soil characterization – both physical and chemical. You will be required to do the laboratory exercises, analyze the data, and prepare and submit laboratory reports. The class project will be a detailed characterization of a particular site. Students will give presentations of this class project during the last week of classes. Students will submit individual final written reports.

## Excepts from:

- *Methods of Soil Analysis: Part 3- Chemical Methods*. D.L. Sparks et al., eds. 1996. Science Society of America. ISBN 0-89118-825-8.
- *Methods of Soil Analysis: Part 4-Physical Methods*. J. H. Dane and G. C. Topp, eds. 2002. Soil Science Society of America. ISBN 0-89118-810-X.
- *King County and Pierce County Soil Surveys*. NRCS.
- *The Nature and Properties of Soils*. Brady.

## Requirements:

- Complete reading assignments
- Participate in labs
  - Write up lab reports
- Work on a group project (such as the North Cr. wetland buffer)
- Prepare website of project characterization and participate in an oral presentation of the group project
- Take a final exam

All communication and assignments will be through the internet.

**Schedule:**

<b>Monday</b>	<b>Wednesday</b>	<b>Reading</b>
Introduction to course, history of Puget Sound soils	Soil texture; walk to class project; collection of samples, texture, color	Puget Sound Glaciation Kohnke Ch 1
Saturday field trip	Collection of samples, in situ bulk density	Pierce County soils surveys MSA Part 4:2.1
Soil Physical Properties; Soil forming factors	pH & EC, % moisture <i>(texture/color lab report due)</i>	Kohnke Ch 2, 7; MSA Part 3:14, 16 MSA Part 4:3.1
Soil mapping & classification, soil types in the Puget Sound <i>(field lab report due)</i>	Sieve analyses, loose bulk density <i>(pH &amp; EC, % moisture lab report due)</i>	Kohnke Ch 9, 10 MSA Part 4:2.4
Soil chemistry, fertility and soil as a plant growth medium	Hydrometer tests <i>(particle size, bulk density lab report due)</i>	Kohnke Ch 4,5 MSA Part 4:2.4
Organic matter and soil microbes	Soil organic matter, CHN <i>(hydrometer lab report due)</i>	Kohnke Ch 6 MSA Part 3:34, 35
Total nutrients and metals analyses	Total nutrients and metals analyses <i>(OM, CHN lab report due)</i>	MSA Part 3:3, 4
Extractable nutrients	Extractable nutrients <i>(total analysis lab report due)</i>	MSA Part 3:38
CEC, base cations	CEC, base cations <i>(extractable nutrients lab report due)</i>	MSA Part 3:40
Student presentations	Student presentations <i>(CEC, base cation lab report due)</i>	
Final		

**Grade calculation:**

50% lab reports

20% final website preparation and presentation of class project (site soil characterization)

30% final test

**Student Eligibility:** This class is intended for undergraduate students in environmental science related studies. Prerequisites: BES 311.

**Academic Honesty**

As UW Bothell students, you are expected to uphold the highest standards of academic conduct. In this class, you should be particularly aware that instances of cheating on exams or plagiarism in writing will be dealt with very seriously. A separate, more detailed handout on academic honesty will be provided to you on the first day of class. You are responsible for reading it thoroughly and understanding its contents.

All work on the exams and papers should be strictly your own and without the aid of any materials not specifically allowed. Plagiarism is defined in the UW Bothell catalog as (I have placed a section in bold and underlined it for emphasis):

“Plagiarism is the use of the creations, ideas or words of someone else without formally acknowledging the author or source through appropriate use of quotation marks, references, and the like. Plagiarizing is stealing someone’s work and presenting it as one’s own original work or thought. Student work in which plagiarism occurs will not ordinarily be accepted as satisfactory by the instructor, and may lead to disciplinary action against the student submitting it. **Any student who is uncertain whether his or her use of the work of others constitutes plagiarism should consult the course instructor for guidance before formally submitting the course work involved.**”