APBI 200
LAB ASSIGNMENT – Soil classification – virtual lab

Before starting this lab, please review the lecture notes for soil classification (March 23, 25 & 27), read the lab manual and review the video clip specific to this lab (see lab 7 on the course wiki).

Honesty Pledge

I hereby pledge that I have read and will abide by the rules, regulations, and expectations set out in the UBC Academic Calendar, with particular attention paid to:
1. **The Student Declaration**
   (http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,285,0,0)
2. **The Academic Honesty and Standards**
   http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,286,0,0
3. **The Student Conduct During Examinations**
   http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,41,90,0

☐ **I affirm that I will not give or receive any unauthorized help on this assignment, that all work will be my own, and that all answers are written in my own words (unless given as a direct quote).**

Section 1 – Soil horizons

1. Name and briefly describe the specific <u>soil formation process</u> that gives rise to:

   (a) Bg horizon

   (b)) Bt horizon

   [4 points]

2. Fill in the blanks:

   a) The horizon disturbed by human activities such as cultivation, logging or habitation is the _____ horizon.

b) The _____ horizon is where materials washed out of the overlying horizons can accumulate. These materials can include Fe, Al, clays and / or soluble organic compounds.

c) The _____ horizon is the uppermost mineral horizon that is often enriched in organic matter originating from the overlying organic horizon and from plant roots.

d) The name of the diagnostic horizon of the Chernozemic order is _____ ___.

e) The diagnostic horizon of the Luvisolic order is the _____ horizon.

f) The _____ mineral horizon is characterized with the maximum biological activity.

[3 points]

Section 2 - Canadian Soil Classification System

3. In the Canadian soil classification system:

(a) There are ___ orders

(b) Orders are differentiated based on _____

(c) Great groups are differentiated based on _____

(d) Subgroups are differentiated based on _____

(e) Families are differentiated based on _____

(f) Series are differentiated based on _____

[3 points]

4. Taking into account horizon thickness (values given in brackets) and information about environmental conditions of a region where the soil is located, identify:

    ●**diagnostic horizon(s)** and

    ●**soil order** according to the Canadian System of Soil Classification.

a)

LFH	(13-0 cm)
Bm	(0-34 cm)
C	(34-130 cm)

(Mixed forest under humid to sub-humid climate; good drainage)

b)

Ah	(0-7 cm)
Bn	(7-60 cm)
Csk	(60-120 cm)

(Semi-arid grasslands in Canadian Prairies)

c)

LFH	(13-0 cm)
Ae	(0-4 cm)
Bhf	(4-27 cm)
Bf	(27-42 cm)
BC	(42-75 cm)
C	(75-135 cm)

(Coniferous forest under humid to sub-humid climate; good drainage)

d)

Ah	(0-9 cm)
Bv	(9-55 cm)
Bss	(55-90 cm)
Cssk	(90-120 cm)

(Semi-arid grasslands in Canadian Prairies)

[8 points]

5. In the UBC's Virtual Soil Monolith collection, go to **monolith no. 9-19** (http://monoliths.soilweb.ca/9-19/). Take a close look at the photo of this monolith and answer the following questions:

[4 points]

(a) What is the soil order and diagnostic horizon(s)?

(b) What is the structure of the diagnostic horizon? Briefly explain, what could have led to the formation of this structure?

(c) How might this type of soil structure affect plant growth?

Section 3 – Data Collection

Go to the Virtual Soil Monolith collection at http://monoliths.soilweb.ca and select a monolith which matches the soil order in each of the three tables given below and fill in the columns.

- For the "Dominant soil forming process" column, consider the lower-case suffixes and indicate the dominant soil forming process for each horizon.

- Record any other observations (e.g. change in color/ texture/ structure that you notice) in the "Other observations" column. If you notice no other observations, you may leave this column blank.

Note: while you can select any monolith from the appropriate soil order, the word "orthic" implies common or typical.

Soil classification: **Chernozem**			
Monolith # (from soilweb):			
Horizons	Depth (cm)	Dominant soil forming process	Other observations
Diagnostic horizon:			
Parent material:			
Commonly associated vegetation / environment:			

Soil classification: **Luvisol**			
Monolith # (from soilweb):			
Horizons	Depth (cm)	Dominant soil forming process	Other observations
Diagnostic horizon:			
Parent material:			
Commonly associated vegetation / environment:			

Soil classification: **Podzol**			
Monolith # (from soilweb):			
Horizons	Depth (cm)	Dominant soil forming process	Other observations
Diagnostic horizon:			
Parent material:			
Commonly associated vegetation / environment:			

[9 points]

Total for this lab assignment   [31 points]