



South Central College

## PLSC 1100 Soils I

### Course Outcome Summary

#### Course Information

<b>Description</b>	This course covers the study of soil. This will include the physical properties, chemical properties, biological properties, soil formation, classification, essential nutrient and soil survey. Soil and water conservation with an emphasis on practices to reduce soil erosion. Tillage practices as they relate to soil properties will also be discussed.
<b>Total Credits</b>	3
<b>Total Hours</b>	64

#### Types of Instruction

##### Instruction Type

##### Credits/Hours

Classroom Presentation

On-Campus Lab

#### Pre/Corequisites

None

#### Institutional Core Competencies

Critical and Creative Thinking - Students will be able to demonstrate purposeful thinking with the goal of using a creative process for developing and building upon ideas and/or the goal of using a critical process for the analyzing and evaluating of ideas.

#### Course Competencies

**1. Explain the factors responsible for the formation of the various soil types.**

**Learning Objectives**

- Define a soil body
- Describe soil components
- List and explain the five soil forming factors
- Describe how soils develop

**2. Classify soil according to its capability and origin**

**Learning Objectives**

- Describe land capability classes
- Interpret land use using a soil survey

Identify a soil limitations and capabilities using a the Soil Web Survey - NCRS

**3. Evaluate the soil profiles as their capabilities and limitations**

**Learning Objectives**

Identify and measure the horizons of a soil profile  
Describe the soil horizons and how they differ.  
Compare and contrast several soil profiles.

**4. Describe the soil physical characteristics and how they influence the capabilities of a soil**

**Learning Objectives**

Explain the three major soil separates  
Determine the soil textural class of a soil sample using the field method, hydrometer, sieve test.  
List soil textural classes  
Determine the textural class using the soil textural triangle  
Calculate the particle density of a soil sample

**5. Explain the factors that determine soil structure and the farming management practices which can promote or destroy soil structure.**

**Learning Objectives**

List soil structural classes  
Classify soil samples according to structural class  
Calculate the bulk density of a soil sample

**6. Understand the role that water has on soil structure, plant growth and soil erosion.**

**Learning Objectives**

Classify the types of soil water.  
Calculate the amount of available water in a soil sample  
Define the forces that act on soil water.  
Explain percolation and leaching

**7. Show an understanding of the importance of soil conservation and how it is essential for the future of agriculture.**

**Learning Objectives**

Discuss climate change and how it affecting soil erosion.  
Identify types of soil erosion- water and wind  
Calculate annual soil loss using the universal soil loss equation.

**8. Identify and explain the agricultural practices that are used to minimize soil erosion.**

**Learning Objectives**

Explain the advantages & disadvantages of no-till, ridge tillage and strip tillage  
Calibrate the amount of crop residue on soil surface  
Identify conservation tillage

**9. Explain the carbon cycle and the role soil plays in that cycle.**

**Learning Objectives**

Identify soil organic matter functions  
Compare organic soil types  
Explain the carbon to nitrogen ratio  
Compare mineral and soil organic colloids  
List several ways to maintain soil organic matter

**10. Understand that soil is a living medium and the organisms the live in the soil are beneficial to the soil and plants**

**Learning Objectives**

Describe the soil organisms  
List ways soil organisms are important  
Describe farming practices which promote healthy populations of soil organisms

**11. List and test for the macro-nutrients in a soil sample**

**Learning Objectives**

- Complete a soil test for nitrogen on a soil sample
- Complete a soil test for phosphorus on a soil sample
- Complete a soil test for potassium on a soil sample
- Complete a soil test for pH on a soil sample

**12. Display participation and professionalism in class**

**Learning Objectives**

- Listen attentively to the instructor and other student speakers
- On task and participates in small group and class discussions
- Looks, acts and speaks professionally while interacting with instructor and other students.
- Prepare for class by reading the assignments and completing the homework

**SCC Accessibility Statement**

South Central College strives to make all learning experiences as accessible as possible. If you have a disability and need accommodations for access to this class, contact the Academic Support Center to request and discuss accommodations. North Mankato: Room B-132, (507) 389-7222; Faribault: Room A-116, (507) 332-7222.

Additional information and forms can be found at: [www.southcentral.edu/disability](http://www.southcentral.edu/disability)

This material can be made available in alternative formats by contacting the Academic Support Center at 507-389-7222.