South Central College

PLSC 1200 Soils II

Course Outcome Summary

Course Information

Description This course will include both the technical an practical information that should be of assistance to a student who will farm or go into the fertilizer business. The course deals with the basic soil-plant relationships and the effects of fertility. Detailed information of soil test results will be covered. Materials from the Certified Crop Advisor program will be used.

Total Credits 3

Total Hours 48

Types of Instruction

Instruction Type	Credits/Hours
Classroom Presentation	

Pre/Corequisites

PLSC 1100 Soils I

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. **Understand the principles of soil fertility which are vital for efficient crop protection and environmental protection**

   Learning Objectives
   List the 17 essential nutrients for plant growth.
   Explain the concept of cation exchange capacity
   Identify the major nutrient anion and cation from in soil.

2. **Understand the concept of soil pH and be able to explain the many factors which influence and determine the soil's pH.**

   Learning Objectives
   Define pH, anion, cation and cation exchange capacity
   Evaluate a soil's pH and make a lime recommendation for that field.

Identify symptoms of crops with poor pH values
Calculate soil lime recommendations
Compare the different liming materials

3. Evaluate and understand the role that nitrogen has in crop production in order to make management decisions to maximize production with minimum environmental damage

Learning Objectives

List the various organisms responsible for N fixation
Define nitrification , ammonification , denitrification, mineralization, volatilization, immobilization, leaching
Discuss the factors which affect nitrification
Describe nitrogen transformations and interactions
Describe the nitrogen cycle
Calculate nitrogen recommendations for a given corn field
Determine yield goals

4. Apply the concepts and properties of phosphorus to make fertilizer recommendations to maximize production and minimize effects on the environment.

Learning Objectives

Explain the various roles phosphorus has in plant growth
Identify phosphorus deficiency symptoms in corn, soybeans, and alfalfa
Articulate the behavior of phosphorus in the soil.
List the factors affecting phosphorus availability in the soil
Calculate phosphorus recommendations for a corn, soybean and alfalfa field

5. Apply the concepts and knowledge of potassium to make fertilizer recommendations to maximize production and minimize effects on the environment.

Learning Objectives

Explain the various roles potassium has in plant growth
Identify potassium deficiency symptoms in corn, soybeans, and alfalfa
Articulate the behavior of potassium the soil.
Calculate potassium recommendations for a corn, soybean and alfalfa field

6. Acquire the understanding of the role secondary nutrients play in crop production and how to manage these nutrients

Learning Objectives

Explain the function of each of the secondary nutrients
Determine the sources of secondary nutrients
Identify secondary nutrient deficiencies
Determine secondary nutrient fertilizer recommendations for various crops and soil types

7. Apply the concepts and knowledge of the eight micronutrient

Learning Objectives

Explain the function of each of the micronutrients
Determine sources of micronutrient
Determine micronutrient recommendations
Identify micronutrient deficiencies

8. Read and evaluate a soil lab test report

Learning Objectives

Practice the correct procedure in collecting good soil samples
Describe the various methods of collecting soil samples, by soil type, grid sampling, composite
Interpret the information on a soil lab test.
Use the soil test results to make a fertilizer recommendation

9. Demonstrate and recommend fertilizer rates based on the facts given and the knowledge of the nutrient characteristics

Learning Objectives

Be aware of the University of Minnesota fertilizer recommendations

Calculate using the math formulas to determine the recommended amounts of N, P and K
Understand the concept of economic optimum yield

10. Display professional demeanor

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

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