



South Central College

## PLSC 2700 Advanced Agronomy

### Course Outcome Summary

#### Course Information

<b>Description</b>	This course includes units of instruction on management practices in the production of corn & soybeans, the economic and environmental aspects of soil damage systems, nutrient management recommendations for nitrogen and phosphorus, and current topics in the agronomy field. Classes will include speakers from the agricultural industry to address the current topics. The lab portion of the course will include grading corn and soybean samples as well on labs as plant genetics.(Prerequisites: PLSC 1300 and PLSC 1400)
<b>Total Credits</b>	3
<b>Total Hours</b>	64

#### Types of Instruction

Instruction Type	Credits/Hours
Lecture	2/32
Lab Instruction	1/32

#### Pre/Corequisites

PLSC 1300 & PLSC 1400

#### Institutional Core Competencies

Communication - Students will be able to demonstrate appropriate and effective interactions with others to achieve their personal, academic, and professional objectives.

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. Evaluate the need, cost, and benefits of installing a drainage system to agricultural land.**

**Learning Objectives**

Compare the landscape of southern Minnesota before and after the drainage of agricultural land.  
Explain the difference between wetlands and wet soil.

Classify the types of soil water.  
Identify the methods of artificial drainage of agricultural land.  
Prepare a partial budget for installing a drainage system.

**2. Assess the possible environmental effects of drainage on the local and national watersheds.**

**Learning Objectives**

Define a watershed.  
Identify the watersheds which are in southern Minnesota.  
Explore the possible effects that artificial drainage has on the waters downstream.  
Describe how drainage contributes to the hypoxia zone in the gulf of Mexico.  
Develop a plan to reduce the concentrate of nitrogen in drainage waters.

**3. Explore current issues of importance in the agronomy field.**

**Learning Objectives**

Identify environmental and production issues that are currently being discussed in the agronomy industry.  
Explore the use of cover crops in the current cropping system.  
Discuss species selection for cover crops.

**4. Evaluate a crop stand to determine the accuracy of the planter and effect of the environment on the seed zone.**

**Learning Objectives**

List the steps to take in evaluating a stand of corn.  
Determine the planting depth of a corn seed.  
Calculate the planting population of a corn field.  
Examine the possible factors for a poor stand of corn plants.

**5. Develop a management plan for the prevention, control and treatment of the major insects affecting corn and soybean crops in Minnesota.**

**Learning Objectives**

Determine the economic threshold for applying a pest control method.  
Identify the type and stages of metamorphosis which each insect completes.  
Explain when and how to scout for insects.  
Identify the type of damage that the insects cause to the crop.  
Determine the cost of a prevention program and treatment program.

**6. Determine the USDA grade for corn and soybean grain samples.**

**Learning Objectives**

Explain the need and purpose of grain grading.  
Identify the factors which determine the grade of a grain.  
Determine the test weight, moisture content, and oil content of grains.  
Determine the amount of foreign matter, damaged grain and class of grain in a sample of grain.  
Calculate the price of corn and soybeans using industry standards.

**7. Describe the fundamental molecular principles of genetics.**

**Learning Objectives**

Describe the fundamental molecular principles of genetics.  
Illustrate the structure DNA.  
Describe the relationship between phenotype and genotype in plant genetic traits.  
Solve simple breeding problems involving Mendelian traits using the Punnett square.  
Utilize probability and chi square for the analysis and interpretation of genetic case studies.

**8. Describe the role genetics has in the development of seed varieties and seed hybrids.**

**Learning Objectives**

Summarize the important discoveries in the study of genetics.  
Identify the persons responsible for the advancement of the study of genetics.  
Outline the sequence of events in plant sexual reproduction from gametogenesis to fertilization.  
Discuss the advantages and disadvantages of hybrid breeding in allogamous crop plants

**9. Demonstrate professional behavior and attitude.**

**Learning Objectives**

Participate in class discussions.

Accept responsibility for preparing and attending class.

Participate in one of the PAS agronomy related activities.

**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.