

Course Code: AGB 214

Course Title: Precision Farming Technology

Department: Agricultural Technologies

Effective Date: Summer 2026

PCS Code: 1.2 - Occupational/Technical Instruction

CIP Code: 01.0201

Repeatability: 0

Credit Hours

Catalog Notation: 2-2-3

Credit Hour Distribution:

Lecture: 2

Lab: 2

Clinical: 0

Total: 3

General Course Information

Catalog Description

Introduction to the most common tools used in precision farming: Global positioning systems, geographic information systems, unmanned aerial systems (UAS), precision planters, variable rate technology, and yield monitoring systems.

General Course Objectives

Students will learn about the most common tools of precision farming including Global Positioning Systems, Geographic Information Systems, Unmanned Aerial Systems (UAS), Precision Planter Technology, Variable Rate Technology, and Yield Monitoring Systems. Students will learn what each tool is used for, how it works, and how each tool fits into an overall program of precision farming.

Minimum Placement Levels

English	Reading	Math
Placement out of ENG 098	Placement out of CCS 098	Placement out of MAT 060

Prerequisites

None

Methods of Evaluation

The minimum evaluation methods include: 2 application projects, 5-7 quizzes, 6-8 lab exercises, 1 midterm exam, and 1 final exam.

Instructional Materials and Additional Supplies

Precision Agriculture Basics, 2018 Edition. Shannon, Clay, and Kitchen. American Society of Agronomy, Crop Science Society of America, Soil Science Society of America. Online version available.
9780891183662 print; 9780891183679 online.

Course Content

General Learning Outcomes (GLOs)

- Reasoning and Inquiry: Students will demonstrate the ability to solve problems using deductive reasoning and logic, quantitative reasoning, or the scientific method.
- Technology: Students will demonstrate the ability to evaluate, select, and appropriately use current and emerging tools.

Course Segments and Student Learning Outcomes

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Introduction	1. Define the basic terms and tools of precision farming used in agribusiness.	3	0	0
Global Positioning Systems	1. Demonstrate an understanding of how global positioning systems work. 2. Define the various accuracy levels and their applications in precision farming. 3. Identify error sources affecting GPS accuracy, as well as understand the various correction types available.	2	4	0
Yield Monitoring Systems	1. Explain the various methods for measuring crop yield. 2. Identify the basic components of yield monitors. 3. Demonstrate how to calibrate yield monitoring systems. 4. Explain the potential benefits of yield maps. 5. Identify possible sources of errors in yield monitoring systems, and apply techniques to correct such errors.	3	6	0
Geographic Information Systems	1. Identify the basic components of geographic information systems. 2. Describe the different GIS data formats. 3. Contrast the various coordinate systems. 4. Apply the methods used to analyze precision farming data. 5. Identify the necessary steps for creating GIS in precision farming.	7	6	0
Variable Rate Technology	1. Identify the necessary components of a variable rate application system. 2. Describe the applications of variable rate technologies in agriculture. 3. Identify the common sensors utilized for variable rate applications. 4. Demonstrate the ability to create a variable rate application map, given spatial data.	3	4	0
Remote Sensing Technology	1. Describe the basic principles of remote sensing as applied to agriculture. 2. Explain how crops interact with electromagnetic energy. 3. Explain the measures of remote sensing systems performance. 4. Identify how various vegetative indices can be used to predict crop conditions. 5. Explain the uses of remotely-sensed data.	3	3	0
Unmanned Aerial Systems (UAS)	1. Discuss the traditional platforms used for aerial acquisition. 2. Recognize the link to unmanned aerial systems (UAS). 3. Describe the legal considerations of UAS commercial operations. 4. Describe the current trends in UAS. 5. Summarize how the Federal Aviation Administration shapes and enforces aviation regulations, standards, and laws.	2	2	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Precision Planters	<ol style="list-style-type: none"> 1. Identify the components of planters equipped with precision technology. 2. Understand the uses and benefits of precision technology on planters. 	2	2	0
Implementation Strategies	<ol style="list-style-type: none"> 1. Identify and implement precision farming technologies in a profitable manner. 	5	3	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
30	30	0