



ILLINOIS VALLEY COMMUNITY COLLEGE

COURSE OUTLINE

DIVISION: Natural Sciences and Business

COURSE: AGR 1206 Introduction to Precision Agriculture

Date: Spring 2023

Credit Hours: 4

Complete all that apply or mark "None" where appropriate:

Prerequisite(s): None

Enrollment by assessment or other measure? Yes No

If yes, please describe:

Corequisite(s): None

Pre- or Corequisite(s): None

Consent of Instructor: Yes No

Delivery Method:	<input checked="" type="checkbox"/> Lecture	3 Contact Hours (1 contact = 1 credit hour)
	<input type="checkbox"/> Seminar	0 Contact Hours (1 contact = 1 credit hour)
	<input checked="" type="checkbox"/> Lab	2 Contact Hours (2-3 contact = 1 credit hour)
	<input type="checkbox"/> Clinical	0 Contact Hours (3 contact = 1 credit hour)

Offered: **Fall** **Spring** **Summer**

CATALOG DESCRIPTION and IAI NUMBER (if applicable):

This course is an introduction to the principles of precision agriculture as applied to modern farming techniques. This course provides an overview of precision farming concepts and the tools of precision farming (GPS, GIS, and VRT). Students will be engaged in hands-on laboratory activities to provide initial experience with the use of precision agriculture tools.

ACCREDITATION STATEMENTS AND COURSE NOTES:

None

COURSE TOPICS AND CONTENT REQUIREMENTS:

- I. Introduction to Precision Agriculture
 - a. Definition
 - b. Main concepts of Precision
 - c. Various Farming Systems
 - d. Careers
- II. Mapping Concepts
 - a. Decision making in agriculture
 - b. Basic map components
- III. GPS Systems
 - a. History
 - b. Types and Characteristics
 - c. Use of receivers
- IV. Differential Correction and Data Transmission
 - a. Sources of Differential Correction
 - b. Advantages and Disadvantages
- V. GIS Data: Vector and Raster Information
 - a. Basic Components
 - b. Create Maps and Display GIS Information
 - c. Variable Rate Technology
 - d. Remote Sensing Equipment
- VI. IDI
 - a. Types
 - b. Uses and procedures
- VII. Data, Features, and Attributes
 - a. Collect data
 - b. Map and geo reference
- VIII. Farm Data Collection
 - a. Sources of data
 - b. Uses of collected data
 - c. Data storage
- IX. Spatial Analysis
 - a. Use of analysis
 - b. Data collection processes
- X. Yield Monitoring
 - a. Calibration
 - b. Cleaning data sources
- XI. Interpolation
 - a. Interpretation of precision data
- XII. Product Application
 - a. Types of Precision Systems
- XIII. Financial Aspects
 - a. Costs of Precision
 - b. Benefits of Precision
- XIV. Exploring Future Technology

INSTRUCTIONAL METHODS:

- Lecture
- Guest Lecture
- Discussion
- Laboratory Activities

EVALUATION OF STUDENT ACHIEVEMENT:

A= 90-100

B= 80-89

C= 70-79

D= 60-69

F= 0-59

Exams = 50%

Quizzes = 20%

Assignments = 15%

Lab Assignments = 15%

INSTRUCTIONAL MATERIALS:

Textbooks

Shannon, D. Kent., Clay, David E., and Kitchen, Newell R. *Precision Agriculture Basics*. 2018. ASA, CSSA, and SSSA. ISBN-978-0-89118-366-2.

Taylor, James. And Whelan, Brett. *Precision Agriculture for Grain Production Systems*. 2013. CSIRO Publishing. ISBN 9780643107472

Resources

Trimble Ag Business

MyCaseIH.com

LEARNING OUTCOMES AND GOALS:

Institutional Learning Outcomes

- 1) Communication – to communicate effectively;
- 2) Inquiry – to apply critical, logical, creative, aesthetic, or quantitative analytical reasoning to formulate a judgement or conclusion;
- 3) Social Consciousness – to understand what it means to be a socially conscious person, locally and globally;
- 4) Responsibility – to recognize how personal choices affect self and society.

Course Outcomes and Competencies

1. Students will explain the basic purpose and concept of precision agriculture.
2. Students will perform basic operations using various modern precision agriculture tools.
3. Students will collect data using precision agriculture tools.
4. Students will analyze and interpret precision agriculture data.
5. Students will make basic recommendations using various precision agriculture data and information.