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:

☒ Lecture 3 Contact Hours (1 contact = 1 credit hour)
☐ Seminar 0 Contact Hours (1 contact = 1 credit hour)
☒ Lab 2 Contact Hours (2-3 contact = 1 credit hour)
☐ 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.
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

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.