Department:

Precision Agriculture

Course Description:

The primary purpose is to demonstrate the various tools available in industry to assist GIS Specialists, Precision Ag Technicians, Agronomists, and Soil Surveyors in collecting accurate field data. The data will then be interpreted using GIS software to create management zones, grids, and other agronomic research-based decisions. The equipment used in this course will consist of GPS receivers for spatial data, soil collection equipment, GIS platforms for interpretation, and soil contact electrical conductivity sensors.

Course Competencies:

1. Properly communicate the Best Management Practices for collecting spatial field data.
2. Develop a knowledge and confidence in the interpretation of soil lab results, fertility and seed prescriptions, and EC field maps.
3. Be able to identify and troubleshoot a lapse in data and how to correct or extract outliers from results.
4. Become knowledgeable in the concepts and execution of various soil sampling techniques.
5. Communicate the procedure and reasoning behind Best Management Practices as they relate to farm profitability and efficiency

Course Content:

A. Electrical Conductivity (EC) and its relation to soil texture
   1) History of soil conductivity mapping
   2) Collection of soil conductivity data
   3) Interpretation of results
B. Best Management Practices
   1) Soil data collection
   2) Soil fertility
   3) Multi-year programs
C. GIS Software Platform
   1) Creating field boundaries
   2) Creating field level data layers (using data collected from the field)
   3) Profit mapping
   4) Creating prescriptions and interpreting results
D. Soil Sampling
   1) Determining proper collection points and patterns in the field
   2) Collecting quality samples

Syllabus

3) Grid versus Zone versus Composite
4) Analyzing results and generating prescriptions

E. Verification of data and results ("Ground truthing")
1) In-season crop scouting
2) Aerial scouting applications
3) Comparison of yield data to field maps
4) Determining short and long-term goals for crops

Learning Assessments:

A. Discussion Questions
B. Graded Assignments
C. Comprehensive Assignments
D. Research Paper/Projects/Presentation/Portfolio
E. Quizzes and Exams

Instructional Materials:

Printed materials and videos will be provided in this course. No textbook required.

Guidelines for Requesting Accommodations Based on Documented Disability or Medical Condition

It is the intention of Highland Community College to work toward full compliance with the Americans with Disabilities Act, to make instructional programs accessible to all people, and to provide reasonable accommodations according to the law.

Students should understand that it is their responsibility to self-identify their need(s) for accommodation and that they must provide current, comprehensive diagnosis of a specific disability or medical condition from a qualified professional in order to receive services. Documentation must include specific recommendations for accommodation(s). Documentation should be provided in a timely manner prior to or early in the semester so that the requested accommodation can be considered and, if warranted, arranged.

In order to begin the process all students **must** complete the "Disabilities Self-Identification Form" at this link: https://highlandcc.edu/pages/disability-services.

This form can also be accessed at the Highland Community College homepage under Students Services/Student Resources/Disability Service or by contacting the Disabilities Coordinator.