

Department:

Precision Agriculture

Course Description:

This course presents instruction in plant identification, plant health, plant pathology, soil health and crop production. This course covers cropping practices, tillage methods, planting methods and pest control methods with the application of precision agriculture technologies. The course includes hands on experience in tillage, planting and fertilizer/insecticide applications using variable rate application maps.

Course Competencies:

Upon completion of the course, the student should be able to:

1. Understand plant anatomy and plant processes.
2. Be able to identify common crops and non-crop plants.
3. Understand the differences in tillage methods and benefits of no-till.
4. Learn the importance of variables in planting, such as seed selection, seed bed preparation, seed depth, seed spacing and emergence.
5. Be able to identify plant disease and insects and recommend control methods.
6. Evaluate soil analysis and make fertilizer and tillage recommendations.
7. Be able to explain the crop production cycle for common crops.
8. Evaluate crop health with aerial analysis and tissue analysis.

Course Content:

- A. Plant Anatomy and Processes
 1. Plant structure, cells and functions
 2. Photosynthesis, Respiration, Translocation and Transpiration
 3. Difference in grasses and legumes.
- B. Plant Identification
 1. Common Crops
 2. Common Weeds
 3. Grasses
- C. Soil Tillage Practices and Economics
 1. Multiple Pass Tillage
 2. Minimum Tillage
 3. No Till
- D. Soil Health
 1. Soil Type
 2. Soil Sample Analysis
 3. Nutrient Identification and Requirements
 4. Fertilizer Recommendations, Economics and Application
- E. Planting Variables
 1. Seed Selection and Seed Population
 2. Variable Rate Planting

3. Variable Hybrid Planting
 4. Seed Bed Preparation
 5. Planting Depth & Seed Spacing
 6. Germination vs Emergence
 7. In Furrow Application of Fertilizer and Insecticide
- F. Plant Pathology
1. Identify Common Plant Diseases and Control Methods
 2. Identify Common Insects and Control Methods
 3. Plant Tissue Sampling
 4. Weed Identification, Weed Control and Chemical Resistant Weeds
- G. Cropping Practices
1. Crop Rotation
 2. Cover Crops
 3. Compaction Control
 4. Irrigation

Learning Assessments:

Competencies may be evaluated by multiple measures, including discussion questions, graded assignments, comprehensive assignments, research paper/projects/presentation/portfolio, quizzes, and exams.

Instructional Materials:

Textbook: Jones, J.B. Jr. (2012). *Plant Nutrition and Soil Fertility Manual (2nd ed.)*. Boca Raton, FL: Taylor and Francis Group. ISBN-13: 978-1439816097.

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” on our [Disability Services website](#).

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.

A Note on Harassment, Discrimination and Sexual Misconduct

Highland Community College seeks to assure all community members learn and work in a welcoming and inclusive environment. Title VII, Title IX, and College policy prohibit harassment, discrimination and sexual misconduct. Highland Community College encourages anyone experiencing harassment, discrimination or sexual misconduct to talk to report to the Vice President for Student Services, the Human Resources Director or complete an [online report](#) about what happened so that they can get the support they need and Highland Community College can respond appropriately.

There are both confidential and non-confidential resources and reporting options available to you. Highland Community College is legally obligated to respond to reports of sexual misconduct, and therefore we cannot guarantee the confidentiality of a report, unless made to a confidential resource. Responses may vary from support services to formal investigations. As a faculty member, I am required to report incidents of sexual misconduct and thus cannot guarantee confidentiality. I must provide our Title IX coordinator with relevant details such as the names of those involved in the incident. For more information about policies and resources or reporting options, please review our [Equity Grievance Policy](#).