

Department:

Agriculture

Course Description:

This course presents instruction in crop plant classification, use, and identification. The course also covers cropping systems, tillage methods, planting methods, harvesting methods, and crop growth patterns. Course emphasis will be balanced between theoretical and practical crop science.

Course Competencies:

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

1. Identify the basic anatomy of plants.
2. Compare cell parts, characteristics, and functions.
3. Relate crop physiology to behavior of the plant under field conditions.
4. Describe the process of photosynthesis, respiration, translocation, and transpiration.
5. Describe the characteristics of soils as they provide for our foundation of life.
6. Identify tillage and seeding methods.
7. Evaluate tillage systems for meeting specified objectives in the field.
8. Evaluate various methods of fertilizer placement.
9. Explain the importance of seed quality for planting, processing, and feed purposes.
10. Perform tests for determining germination, viability, and mechanical damage.
11. List the principle methods used in plant breeding and seed production.
12. Explain the economic importance of weeds and their control.
13. Identify weed propagation.
14. Describe methods used in weed control.
15. Evaluate crop damage caused by insects and methods of control.
16. Identify economically important insects by damage caused, life cycle, feeding habits, and their control characteristics.
17. Evaluate crop losses from plant disease.
18. Identify plant diseases by symptoms and life cycle and suggest control methods.
19. Evaluate harvesting, drying, and storage methods for reducing monetary losses.

Course Content:

- A. Plant Anatomy and Identification
 1. Anatomy of crop plants for identification and application to specific management and production practices
 2. Cell parts, characteristics, and functions
 3. Monocot and dicot seeds, germinating seed, and seedling
 4. Functions of grass and legume floral parts

5. Variations in the parts of stems, leaves, and roots
6. Methods of plant classification
7. Identifying common crop plants by their seed, vegetative parts, and inflorescence
8. Common and scientific names for crop plants
- B. Plant Physiology and Climate
 1. Crop physiology related to behavior of the plant under field conditions
 2. Growth rate under optimum conditions
 3. Vegetative and root growth for corn and soybeans
 4. Photosynthesis, respiration, translocation, and transpiration
 5. Effects of sunlight, carbon dioxide, soil water, and oxygen on plant growth
 6. Climate as the major factor determining which crops may be grown in a given area
 7. Cropping regions and annual precipitation
 8. Effects of temperature and humidity on plant growth
 9. Changes in weather patterns
 10. Methods used in weather forecasting
- C. Soil, Water, and Tillage
 1. Characteristics of soils as they provide for our foundation of life
 2. Variations in soils as influenced by the five soil-forming factors
 3. Soil use and management by considering the physical, chemical, and biological properties of soil
 4. Soil water and factors affecting absorption, retention, and availability for plant growth
 5. Tillage and seeding methods
 6. Factors influenced by primary and secondary tillage methods
 7. Tillage systems for meeting specified objectives in the field
 8. Effects of changes in the environment on tillage and seeding methods
 9. Methods of fertilizer placement
- D. Plant Breeding, Seed, and Grain Quality
 1. Seed quality for planting, processing, and feed purposes
 2. Tests for determining germination, viability, and mechanical damage
 3. Legal and certified seed by the standards required
 4. Market grade for grain as outlined by the "Official Grain Standards Act"
 5. Improved varieties and methods employed in plant breeding
 6. Basic principles of genetics
 7. Basic terms used in plant breeding
 8. Principle methods used in plant breeding and seed production
- E. Weeds, Insects, Diseases, and Harvesting
 1. The economic importance of weeds and their control
 2. Weed propagation and life cycles
 3. Methods for weed control
 4. Identification and control characteristics of specified weeds
 5. Crop damage caused by insects and methods of control
 6. Economically important insects by damage caused, life cycle, feeding habits, and their control characteristics
 7. Crop losses from plant disease

8. Symptoms and life cycles of plant diseases
9. Plant disease control methods
10. Harvesting, drying, and storage methods for reducing monetary losses

Learning Assessments:

Course competencies will be assessed by use of discussion questions, graded assignments, comprehensive assignments, research paper, projects, presentations, portfolio, quizzes, and exams.

Instructional Materials:

Introduction to Agronomy: Food, Crops, and Environment, Moncada, Sheaffer. 2nd Ed., 2012
ISBN: 9781111312336

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.