**BARTON COMMUNITY COLLEGE**

**COURSE SYLLABUS**

1. **GENERAL COURSE INFORMATION**

Course Number: AGRI1114

Course Title: Plant Science

Hours Credit: 5

Division & Discipline: Workforce training & Community Education/Agriculture

Course Description: This course is an overview of the morphology, physiology, ecology, and propagation of flowering plants with emphasis on the production of crop plants.

1. **INSTRUCTOR INFORMATION**
2. **COLLEGE POLICIES**

Students and faculty of Barton Community College constitute a special community engaged in the process of education. The College assumes that its students and faculty will demonstrate a code of personal honor that is based upon courtesy, integrity, common sense, and respect for others both within and outside the classroom.

Plagiarism on any academic endeavors at Barton Community College will not be tolerated. The student is responsible for learning the rules of, and avoiding instances of, intentional or unintentional plagiarism. Information about academic integrity is located in the Student Handbook.

The college reserves the right to suspend a student for conduct that is determined to be detrimental to the College educational endeavors as outlined in the College Catalog, Student Handbook, and College Policy & Procedure Manual. (Most up-to-date documents are available on the College webpage.)

Any student seeking an accommodation under the provisions of the Americans with Disability Act (ADA) is to notify Student Support Services via email at [disabilityservices@bartonccc.edu](mailto:disabilityservices@bartonccc.edu).

1. **COURSE AS VIEWED IN TOTAL CURRICULUM**

This is an introductory course in agriculture giving the student the background needed to understand the growth, development and reproduction of plants grown for agriculture, home, and industry. This course will transfer to Kansas State University and Fort Hays State University as an equivalent course.

1. **ASSESSMENT OF STUDENT LEARNING**

Barton Community College is committed to the assessment of student learning and to quality education. Assessment activities provide a means to develop an understanding of how students learn, what they know, and what they can do with their knowledge. Results from these various activities guide Barton, as a learning college, in finding ways to improve student learning.

Course Outcomes, Competencies, and Supplemental Competencies:

1. Explain the history, development and importance of agriculture in the development of civilization.
   1. List and explain the importance of plants to people.
   2. List the major steps of the development of agriculture from arable to commercial stages.
   3. List and define the basic agricultural system in the world today.
   4. Define and accurately explain the differences of intensive and extensive agriculture.
   5. List the major crop plants in the world and USA today, their uses, and distribution.
   6. List the minor crop plants found in the North America and their uses.
2. Demonstrate an understanding of basic crop terminology.
   1. List and define the eight types of crop classification systems.
   2. List, define and give examples of crop classifications within each crop classification systems.
   3. Outline and define the classification of crops based on life cycle.
   4. List and define the levels of the taxonomic classification of crops, their meaning, and the importance of botanical classification.
   5. List the two most important botanical crop families with examples of each.
3. Study concepts and components of agroecology.
   1. List and define the basic concepts ecology with emphasis on the differences between natural and manmade ecosystems.
   2. List and define the basic types of interactions of plants with each other and other parts of the ecosystem.
   3. List and define the basic types of agroecosystems with attention to their strengths and weakness for crop production.
   4. List the factors affecting crop plant communities and their effects.
4. Demonstrate understanding of basic crop production systems.
   1. List and define the common cropping systems of North America.
   2. List and define the advantages and disadvantages of various North American cropping systems.
5. Describe soils and their role in plant production.
   1. Define a “soil” and list the biotic and abiotic components of the soil environment.
   2. List and define the factors affecting the soil environment.
   3. Identify the impacts of the soil environment on crops plants.
   4. Define and essential plant nutrient.
   5. List the sources of plant nutrients, the seventeen essential plant nutrients, and their functions in the plant.
6. Describe seeds and seedlings.
   1. List and define the components of seeds and the differences between monocot and dicot seeds.
   2. List, define, and give examples of the types of seeds found in agriculture.
   3. List the major components of seeds and their function.
   4. List the similarities and differences between monocot and dicot seeds. Contrast how these differences influence seed germination, seedling growth, and agronomic decisions.
   5. List and accurately describe the stages of germination, the causes of poor germination and seedling growth.
   6. Define dormancy and list define the types of dormancy and its importance in agriculture.
7. Explain crop roots, stems, leaves, photosynthesis, and respiration.
   1. List and accurately describe the functions of roots, stems, and leaves.
   2. List and define the basic structure of roots, stems, and leaves with attention to the similarities and differences between monocots and dicots.
   3. List the differences and similarities between the roots, stems, and leaves, of monocots and dicots and the importance of the differences.
   4. List and define the types of cells, tissues, regions, and systems of roots, stems, and leaves.
   5. List and define the effects of the environment on the growth and development of roots, stems, and leaves.
   6. Define photosynthesis and respiration. Explain the importance of photosynthesis for life on earth.
   7. List the inputs and outputs of photosynthesis and respiration.
   8. List the steps of photosynthesis, their products, and factors influencing rates of photosynthesis.
   9. Define C3 and C4 plants with regards to respiration and photosynthesis.
   10. Accurately list and discuss the effects of C3 vs. C4 photosynthesis on crop production.
   11. List the factors affecting plant respiration rates and their potential effects.
8. Describe flowering and reproduction.
   1. Define flowering and list/define other types of plant propagation.
   2. List and define the essential and accessory parts of a flower.
   3. List and accurately describe the differences between monocot and dicot flowers.
   4. List and define the possible flower and inflorescence types.
   5. Define floral initiation and the factors that affect it with emphasis on photoperiodism.
   6. List the steps in sexual reproduction and the advantages/disadvantages of sexual reproduction.
   7. List the types of asexual reproduction found in crop plants.
9. Explain basic aspects of crop improvement.
   1. Define and list the differences between a cultivar, variety, and hybrid.
   2. Define crop resistance, the types of resistance, and the advantages/disadvantages to resistance.
   3. List and describe the types of crop improvement and the advantages/disadvantages of each.
10. Explain crops and their interaction with the environment.
    1. Define weather, climate, climatology, and meteorology.
    2. List and describe the atmosphere and its components.
    3. List and describe the components of the weather and climate and their effect on crop production and adaption.
    4. List and define the types of climate based on moisture and temperature regimes.
    5. List and define the effects of moisture and temperature on crop production.
    6. List and define the types of crop losses from pests.
    7. List and describe crop losses from pests.
    8. Define Integrated Pest Management and its role in crop production
    9. List and define the roles of insects in the environment.
    10. Define the types of insect life cycles
    11. Define the types of pest control.
    12. Define plant disease, list the possible causes, and the possible damage to crop plants.
    13. Define the two types of plant diseases and their possible causes.
    14. List the process of infection by plant pathogens and the conditions necessary for infection.
    15. List and define the types of disease control.
    16. Define the term weed and the importance of weed control in crop production.
    17. List the crop losses incurred by weed infestations
    18. List and accurately describe the four general methods of weed control.
    19. Define herbicide, the general categories of herbicide and application methods.

1. **INSTRUCTOR’S EXPECTATIONS OF STUDENTS IN CLASS**
2. **TEXTBOOKS AND OTHER REQUIRED MATERIALS**
3. **REFERENCES**
4. **METHODS OF INSTRUCTION AND EVALUATION**
5. **ATTENDANCE REQUIREMENTS**
6. **COURSE OUTLINE**