**BARTON COMMUNITY COLLEGE**

**COURSE SYLLABUS**

1. **COURSE INFORMATION**

Course Number: AGRI 1150

Course Title: Economic Entomology

Hours Credit: 4

Division and Discipline: Technical Education: Agricultural Business Management

Course Description: This course is designed to provide students working towards a career in crop or livestock production the overall background in insect biology, pest control, and economic pest management to identify pest management strategies that are economically and environmentally sustainable.

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 THE TOTAL CURRICULUM**

Studying insects, their populations, management, contributions and destructive capabilities is increasingly important in today’s agricultural production with the increase in input process and the need to optimize crop yields to meet world demand. Insects also have economic and health impacts but in urban areas as well. Between increased government regulations and the public's concern for safe water, food and air, there has been growing interest in the practices, procedures, and reasons for insect control in agriculture.

Economically, insect management can make the difference between profit and loss for crop and livestock production. Ecologically and environmentally a proper understanding of insect life cycles and behavior is crucial in developing Integrated Pest Management (IPM) programs which are economically and environmentally sustainable. The ability to develop effective IPM programs is especially important as state and federal agencies are working to protect beneficial insect species and develop pest management strategies to cope with increasing insect pests as climates change

## 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. Describe insects, related arthropods, and their relationship between man and insects.
   1. List and define the classes of arthropods with emphasis on insects and closely related classes.
   2. Relate the abundance of insects overall on earth with their roles both beneficial and harmful.
   3. Define the concept of a pest and its status in the environment
   4. List and define the general categories of pest management.
2. Students will understand insect structures and life processes.
   1. List and define the three basic parts of an insect body
   2. List and accurately describe the function of the parts making up the head, thorax, and abdomen.
   3. List and explain the following life systems and processes in insects:
      1. Feeding and digestion
      2. Excretion
      3. Circulatory system
      4. Respiration
      5. Musculature and locomotion
      6. Sensory organs
      7. Nervous system
      8. Reproduction
3. Classify insects accurately.
   1. List and define the elements of the taxonomic classification system for insects.
   2. List and accurately define the major insect subclasses and orders
   3. Use common taxonomic keys to identify insect species form samples collected in the field.
4. Explain insect life cycles.
   1. List and define the types of insect reproduction, fertilization, and embryo development
   2. List and accurately describe post embryonic growth and development including:
      1. Egg hatching
      2. Juvenile growth
      3. Types of metamorphosis
   3. List and accurately describe the mature behavior and activity including:
      1. Adult emergence
      2. Mating
      3. oviposition
   4. List and define insect seasonal cycles and their importance as adaptive behaviors and in pest control.
5. Describe the role of ecology in insect dynamics.
   1. List and define the following concepts and terms relating to insect ecology and their importance in understanding insects and the environment
      1. Populations
      2. Ecology
      3. Ecosystems
      4. Agroecosystems
   2. List and accurate describe the environmental factors in insect abundance.
   3. Define population change, birth rate, death rate, types of movement and accurately describe how they are affected by the environment.
   4. List the theories of insect population regulation and discuss their possible application to insect pest management.
6. Describe basic monitoring and sampling techniques.
   1. Define the following terms: sample, sample unit, sampling universe, sampling techniques, and sampling programs.
   2. List and define common insect sampling techniques.
   3. List and define the types of sampling programs and their applications.
7. Explain the concepts behind economic decision making in controlling insects.
   1. List and define the concepts involved in the concept of economic injury levels.
   2. Calculate economic decision levels through listing and the following concepts and terms:
      1. Market value
      2. Management costs
      3. Degree of injury per insect
         1. List and define types of injury
      4. Crop susceptibility to injury
      5. Damage avoidance
   3. List and accurately describe the components of environmental economic injury level including:
      1. Management costs
      2. Reducing damage per insect
      3. Other variables
   4. List and define pest control implementation categories.
8. Explain basic theories of pest management.
   1. List and define important historical milestone in pest control.
   2. Define and list the characteristics of pest management and the possible pest control strategies.
   3. List and define the steps in developing a pest management program.
9. List and describe the types of pest management.
   1. List the types of biological control, define them, and compare their relative practicality.
   2. List and define the types of biological control releases and their effectiveness
   3. List and accurately describe the components of the following types of ecological management of insect pests:
      1. Reducing average favorable conditions
      2. Disrupting the continuity of requisites
      3. Diverting pest populations
      4. Reducing injury impact.
   4. List the conditions requiring pesticide application.
   5. List the types of pesticides, modes of actions, and efficacy.
   6. Define the development of insect resistance to pesticides and methods to prevent resistance or management it.
   7. List and define the methods of plant and animal resistance to insect pests and their efficacy.
10. **INSTRUCTOR’S EXPECTATIONS OF STUDENTS IN CLASS**
11. **TEXTBOOKS AND OTHER REQUIRED MATERIALS**
12. **REFERENCES**
13. **METHODS OF INSTRUCTION AND EVALUATION**
14. **ATTENDANCE REQUIREMENTS**
15. **COURSE OUTLINE**