

Discipline: Agriculture	Sub-discipline: Plant Science
General Course Title: <b>Plant Protection/Integrated Pest Management</b>	Min. Units: <b>3 Semester</b>
Proposed Suffix: <b>L</b>	
<p>Course Description:</p> <p>The origin, history, and management measures for insect, plant pathogen, weed, and other pests of field crops; pest biology and life cycles are studied to demonstrate the use of various Integrated Pest Management (IPM) technologies for economic crop production. Pesticide regulations, application, formulations, and materials for specific uses are covered. Laboratory required.</p>	
Required Prerequisites or Co-Requisites <sup>1</sup>	
Advisories/Recommended Preparation <sup>2</sup>	
<p>Course Objectives: <i>At the conclusion of this course, the student should be able to:</i></p> <ul style="list-style-type: none"> <li>• Explain the terms Plant Protection and IPM as they relate to a field crop situation.</li> <li>• Describe the role of government agencies and regulations as they relate to IPM and food safety.</li> <li>• Employ the principles and concepts of IPM in field crop environments.</li> <li>• Identify insects and related pests, diagnose and analyze crop injury, and select proper management techniques.</li> <li>• Identify plant pathogens and related pests, diagnose and analyze crop injury, and select proper management techniques.</li> <li>• Identify weeds, diagnose and analyze crop injury, and select proper management techniques.</li> <li>• Identify other pests, diagnose and analyze crop injury, and select proper management techniques.</li> <li>• Safely and properly mix, calibrate, apply, and dispose of different pesticide formulations utilizing different techniques and equipment.</li> <li>• Explain basic first aid and spill management techniques in a pesticide accident situation.</li> <li>• Explain the mode of action of pesticides, pesticide absorption by the human body, and the importance of poisoning measurements.</li> <li>• Design a year long IPM program for a specific crop at a specific field.</li> </ul>	
<p>Course Content:</p> <ol style="list-style-type: none"> <li>1. Introduction <ol style="list-style-type: none"> <li>A. History of plant protection <ol style="list-style-type: none"> <li>1. Early chemicals and methods</li> <li>2. FIFRA</li> <li>3. FDA and EPA</li> </ol> </li> <li>B. History of IPM <ol style="list-style-type: none"> <li>1. Economic entomology</li> <li>2. Disease forecasting</li> <li>3. Economic thresholds</li> <li>4. Adaptation of IPM</li> <li>5. IPM in crop production today</li> </ol> </li> </ol> </li> </ol> <p><b>Plant Protection/Integrated Pest Management (Content Continued)</b></p> <ol style="list-style-type: none"> <li>2. Entomology Plant Protection / IPM <ol style="list-style-type: none"> <li>A. Review</li> </ol> </li> </ol>	

<sup>1</sup> Prerequisite or co-requisite course need to be validated at the CCC level in accordance with Title 5 regulations; co-requisites for CCCs are the linked courses that must be taken at the same time as the primary or target course.

<sup>2</sup> Advisories or recommended preparation will not require validation but are recommendations to be considered by the student prior to enrolling.

1. Insect orders
    - a. basic insect structure and its relation to management
    - b. life cycles and their relation to management
  2. Destructive insects
    - a. chewing insects
    - b. rasping insects
    - c. sucking insects
    - d. disease transmission
  3. Beneficial insects and their usage
    - a. combating other insects
    - b. combating weeds and other problems
  - B. IPM techniques and strategies
    1. Preventing an insect outbreak
    2. Sweeps, traps, and field counts
      - a. evaluating a field
        - 1) techniques and equipment for sampling, seeing, and counting pests.
        - 2) Pheromones
      - b. determining economic thresholds
        - 1) relating economic thresholds to stage of crop
    3. Recommending a strategy in a field crop situation
    4. Implementing strategy in a field crop situation
  - C. Preventing insect outbreaks
    1. Regional vs. local perspective
    2. Cultural and crop rotation methods
    3. Chemical methods
  - D. Managing insect outbreaks
    1. Cultural methods
    2. Chemical methods
3. Plant Pathology – IPM
  - A. Hosts and pathogenic organisms
    1. Fungi
    2. Bacteria
    3. Viruses and virus-like organisms
    4. Nematodes
    5. Non-biotic problems
  - B. Life cycle and infection
    1. Disease triangle
    2. Koch’s postulates
  - C. Damage and impact on production
    1. Barratt-Horsfall assessments
  - D. Prevention
    1. Genetic resistance
    2. Host susceptibility
    3. Timing
  - E. Managing disease outbreaks
    1. Timing
    2. Chemical management techniques
- Plant Protection/ Integrated Pest Management  
(Content Continued)**
4. Weeds – IPM
    - A. Identification
      1. Grasses, dicots, and legumes
      2. Weed plant families

- B. Weed life cycles
  - C. Preventing weed outbreaks
  - D. Managing weed outbreaks
    - 1. Timing
    - 2. Mechanical management techniques
    - 3. Chemical management techniques
5. Other Pests – IPM
- A. Mollusks
  - B. Vertebrates
  - C. Presenting pest outbreaks
  - D. Managing pest outbreaks
6. Pesticides and IMP
- A. Laws and regulations
    - 1. Pesticide registration
    - 2. Restricted materials
    - 3. Operators – licensing
    - 4. Storage, transportation, and disposal
    - 5. Applicator and field worker safety
    - 6. Public safety and pesticide residues
  - B. Types of pesticides
    - 1. Benefits, uses, and needs
    - 2. Formulations
    - 3. Insecticides
      - a. application methods
      - b. mode of action
    - 4. Plant pathological pesticides
      - a. application methods
      - b. mode of action
    - 5. Herbicides
      - a. application methods
      - b. mode of action
  - C. Pesticide application and safety
    - 1. Label
    - 2. Mixing and applying
    - 3. Equipment calibration
    - 4. Protective clothing
    - 5. Handling pesticides
    - 6. First aid
    - 7. Spill management

Laboratory Activities: Individual Laboratory Activities are designed to support course objectives.

Methods of Evaluation: Lecture Comprehensive Quizzes and Exams Written Critical Thinking Scenarios Problem Analysis and Solution Research and Term Papers	Methods of Evaluation: Laboratory Laboratory Skill Validation by Observation Laboratory Reports Laboratory Research Projects and Reports Laboratory Skill Practicum Exams
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Typical Textbooks, Manuals, or Other Support Materials  
Entomology and Pest Management, 2<sup>nd</sup> Edition. Pedigo, Larry P. 1996. Prentice Hall. (ISBN# 0-13-373531-1)  
The New Pesticide User's Guide. Bohmont, Bert L. 1983.

Reston, VA. (ISBN# 0-8359-5538-9)  
The Grower's Weed Identification Handbook Publication 4030-I.  
Cooperative Extension, University of California. 1998. (No  
ISBN number at this time.)

**Statewide Articulation: CPP-PLT 333\*, other universities as lower division elective  
(\*upper division – subject matter competency determined by university advisor)**

FDRG Lead Signature:

Date:

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**Internal Tracking Number**