I. **OVERVIEW**

*The following information will appear in the 2009 - 2010 catalog*

**PLSC-260  Plant Disease Control**  
3 Units

Study of common local crop diseases, their economic importance, identification, life cycles, host and habitat relationships, and methods of control. Field trips are required. Course is applicable to the associate degree.

II. **LEARNING CONTEXT**

*Given the following learning context, the student who satisfactorily completes this course should be able to achieve the goals specified in Section III, Desired Learning:

A. **COURSE CONTENT**

1. **Required Content:**

   A. Introduction to plant pathology  
   B. Disease classification  
   C. Diagnosis of plant diseases  
   D. Parasitism  
   E. Disease development/dissemination
      1. Disease cycles  
   F. How pathogens injure plants
      1. Effects of pathogens on plant function  
   G. Plant defense mechanisms  
   H. Genetics
      1. Disease resistance  
   I. Environmental effects on disease development  
   J. Epidemics  
   K. Forecasting  
   L. Types of plant diseases
      1. Fungi
         a. Lower fungi  
         b. Higher fungi  
      2. Bacteria  
      3. Mycoplasms  
      4. Parasitic higher plants  
      5. Viruses  
   M. Nematodes  
   N. Physiogenic
   O. Environmental
   P. Nut tree diseases  
   Q. Grape diseases
   R. Plant protection
      1. Disease control programs
      2. Eradication methods  
      3. Cultural control
         a. Quarantine – exclusion  
      4. Biological control  
      5. Chemical control
         a. Pesticide safety
b. Pesticide application

2. **Required Lab Content:**

   A. Introduction to plant pathology  
   B. Disease classification  
   C. Diagnosis of plant diseases  
   D. Parasitism  
   E. Disease development/dissemination  
     1. Disease cycles  
     F. How pathogens injure plants  
     1. Effects of pathogens on plant function  
   G. Plant defense mechanisms  
   H. Genetics  
     1. Disease resistance  
   I. Environmental effects on disease development  
   J. Epidemics  
   K. Forecasting  
   L. Types of plant diseases  
     1. Fungi  
     a. Lower fungi  
     b. Higher fungi  
     2. Bacteria  
     3. Mycoplasms  
     4. Parasitic higher plants  
     5. Viruses  
     6. Nematodes  
     7. Physiogenic  
   M. Nut tree diseases  
   N. Grape diseases  
   O. Landscape and turf diseases  
   P. Vegetable crop diseases  
   Q. Tree fruit diseases  
   R. Plant protection  
     1. Disease control programs  
     2. Eradication methods  
     3. Cultural control  
     a. Quarantine – exclusion  
     4. Biological control  
     5. Chemical control  
     a. Pesticide safety  
     b. Pesticide application

**B. HOURS AND UNITS**

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**C. METHODS OF INSTRUCTION (TYPICAL)**  
Instructors of the course might conduct the course using the following method:

1. Lecture, discussion, demonstrations, and reading assignments
2. Colored slides, filmstrips, and films to supplement above.
3. Preserved and fresh samples of diseased plants and pathogens.
4. Microscopic examination of infected plant material.
5. Student identification of samples of diseases.
6. Written lab reports with evaluation of subject matter covered.

D. ASSIGNMENTS (TYPICAL)

1. EVIDENCE OF APPROPRIATE WORKLOAD FOR COURSE UNITS
   Time spent on coursework in addition to hours of instruction (lecture hours)
   a. Preparation for written and practical exams.
   b. Daily reading of materials.
   c. Preparation of written laboratory reports.

2. EVIDENCE OF CRITICAL THINKING
   Assignments require the appropriate level of critical thinking
   Develop a complete disease management plan for a central valley crop that includes: a management calendar defining the timing of management practices and cultural, biological and chemical control applications for anticipated diseases; a complete list and description of the plant diseases for the commodity, including written and graphics descriptions of their signs and symptoms, causal agent, lifecycle and control options; and chemical control application methods and the laws and regulations governing their application.

   Write a laboratory report that includes the following: description of the lab/field trip including the specific plant diseases and controls observed; identification/discussion of those plant diseases, including signs, symptoms, and life cycles; description of disease management practices observed; and evaluation of the activity.

E. TEXTS AND OTHER READINGS (TYPICAL)


2. Other: U.C. IPM Manuals for specific crops, such as:
   U.C. Division of Agriculture and Natural Resources Publication #3343 (1992). Grape Pest Management (2nd ed.). Oakland, CA: University of California
   U.C. Division of Agriculture and Natural Resources Publication #3359 (1994). Pests of Landscape Trees and Shrubs. Oakland, CA: University of California
   U.C. Division of Agriculture and Natural Resources Publication #4053 (1989). Turfgrass Pests. Oakland, CA: University of California

III. DESIRED LEARNING

A. COURSE GOAL
   As a result of satisfactory completion of this course, the student should be prepared to:

   Develop a complete disease management plan for a central valley crop that includes: a management calendar defining the timing of management practices and cultural, biological and chemical control applications for anticipated diseases; a complete list and description of the plant diseases for the commodity, including written and graphics descriptions of their signs and symptoms, causal agent, lifecycle and control options; and chemical control application methods and the laws and regulations governing their application.
B. **STUDENT LEARNING GOALS**  
*Mastery of the following learning goals will enable the student to achieve the overall course goal.*

1. **Required Learning Goals**  
*Upon satisfactory completion of this course, the student will be able to:*

   a. Define the types of plant diseases  
   b. Define common plant pathology terms.  
   c. Classify plant pathogens into genera and species.  
   d. Identify laws, rules, and regulations for pest control.  
   e. Select proper methods and timing of control.  
   f. Discuss economic importance of biological control methods.  
   g. Discuss economic importance of biological control methods.

2. **Lab Learning Goals**  
*Upon satisfactory completion of the lab portion of this course, the student will be able to:*

   a. Identify signs and symptoms of plant disease.  
   b. List, describe and compare physiogenic diseases.  
   c. Identify common plant diseases caused by fungi, bacteria, nematodes, and virus.

IV. **METHODS OF ASSESSMENT (TYPICAL)**

A. **FORMATIVE ASSESSMENT**

   1. Correct identification and classification of at least 60% of a set of plant pathogen examples infecting common central valley crops by common and Latin (genera and species) names.

   2. Evaluation of written and practical exams designed to test student knowledge of common plant diseases and their classification, in which students will answer with at least 60% accuracy.

   3. Written laboratory reports that include: description of the lab/field trip including the specific plant diseases and controls observed; identification/discussion of those plant diseases, including signs, symptoms, and life cycles; description of disease management practices observed; and evaluation of the activity.

B. **SUMMATIVE ASSESSMENT**

   1. Complete disease management plan for a central valley crop that includes: a management calendar defining the timing of management practices and cultural, biological and chemical control applications for anticipated diseases; a complete list and description of the plant diseases for the commodity, including written and graphics descriptions of their signs and symptoms, causal agent, lifecycle and control options; and chemical control application methods and the laws and regulations governing their application.