Course Syllabus

Department: Conservation / Horticulture

Date: December 5, 2012

I. Course Prefix and Number: BIO 260
   Course Name: Plant Pathology
   Credit and contact hours: 4 Credit Hours and 5 Contact Hours

Catalog Description including pre- and co-requisites:
Investigation of the nature, cause, diagnoses of plant health problems. The interaction of
the environment, the disease causing organism, and the plant will be considered in
relation to environmentally sound control. Site development and corrective horticulture
practices in relation to health building will be considered. Students will be trained to
identify common plant diseases including environmentally caused disorders. Field
analysis, sampling and diagnostic techniques. Field Trips. Prerequisite: BIO 121, 251 or
permission of instructor.

Relationship to Academic programs and curriculum:
This course is a required course for both the Horticulture AAS degree and the
Certificate. This course may also be taken as an elective for students outside of the
horticulture program if they meet the pre-requisite requirement.

II. Course Student Learning Outcomes:
Upon the completion of this one semester course students will be able to:

   A. Describe the various strategies for prevention of plant diseases in the garden,
   greenhouse, nursery, and field settings.

   B. Categorize a variety of disease cycles relative to specific plants including
   sources of inoculums, manner of spread, and how pathogens survive difficult
   seasons.

   C. Recognize the ecological distribution of diseased plants and the site factors that
   favor disease.

   D. Identify common spore types and research the various pathogens to which a
   particular plant is susceptible.

   E. Assemble a collection of plant and plant disease examples relative to specific
   topics within the class lectures and labs.

College Learning Outcomes Addressed by the Course:

☐ writing        ☐ computer literacy
☐ oral communications ☐ ethics/values
☒ reading        ☐ citizenship
☐ mathematics    ☒ global concerns
☒ critical thinking ☒ information resources
III. **Assessment Measures** (Summarize how the college and student learning outcomes will be assessed):

<table>
<thead>
<tr>
<th>List identified College Learning Outcomes(s)</th>
<th>Specific assessment measure(s)</th>
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<tr>
<td>Reading</td>
<td>Students will complete reading assignments specific to an assigned topic in a variety of text and professional references. Students will then be required to answer a number of questions related to the topic. These questions will be based on a student’s ability to comprehend, interpret and evaluate the reading materials then analyze the question to form the proper answer.</td>
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<td>Critical Thinking</td>
<td>Students will be required to identify and analyze a number of specific identifiers for a given plant pathogen following their development of a culture. They will then be required to write out a evaluation report about the pathogen. Ten (10) reports and fifteen (15) identified plant samples will be required.</td>
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<td>Informational Resources</td>
<td>Students will be required to use a variety of professional and academic information resources to identify and evaluate each plant pathogen assigned. They will then use this information to answer specific parts of the assigned pathogen report. Ten (10) reports will be required over the course of the semester.</td>
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<td>Computer Literacy</td>
<td>Report submissions will be required in typed format with inclusion of a variety of different tables, graphs, graphics and visual enhancements. Professional format and citation requirements will be included in the grading.</td>
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IV. **Instructional Materials and Methods:**

**Types of Course materials:**
- Text books
- In-class lectures and labs developed by instructor that relate to the specific topic to be covered
- Visual images presented in class with study guides provided by instructor
- Library resources

**Methods of instruction (e.g. Lecture, Labs, Seminars ...):**
- Lecture with handouts, power point, videos, and visual examples
- Labs with growth and observation of a variety of pathogen cultures followed by evaluation and reporting.
- Student development of a collection of plants relative to diseases covered in class.
- In the field observation of diseases as guided by the instructor.
- Visitation of the Monroe County Cooperative Extension diagnostic laboratory.
- In-class discussion presentations by an expert(s) from the Geneva Experiment Station.
V. General Outline of Topics covered
I. Introduction
   a. Diagnosis, symptoms and signs
   b. Plant disease triangle with vector
   c. Biotrophs and necrotrophs

II. Laboratory
   a. Collection procedure details
   b. Moist chambers
   c. Agar culture media

III. Types of Diseases
   a. Ascomycetes
   b. Deuteromycetes
   c. Basidiomycetes

IV. Fungal diseases
   a. Mycorrhizae
   b. Oomycetes
   c. Water molds

V. Plant Pathogenic Bacteria

VI. Nematodes

VII. Viruses

VIII. Abiotic disorders

IX. Parasitic Plants

X. People and Plant Diseases

XI. Disease Management & Control