

# PLPA - PLANT PATHOLOGY

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## PLPA 601 Fundamentals of Plant Pathology

**Credits 3. 3 Lecture Hours.**

Increase the understanding of the underlying mechanisms in the disease process; apply that understanding to reduce losses caused by disease; nature of disease causing agents; the outcomes of the interaction between plants and pathogens.

**Prerequisite:** Graduate classification.

## PLPA 603 Plant Disease Management

**Credits 3. 3 Lecture Hours.**

Online course designed to provide a strong foundation in the principles and practices of management of plant diseases; analysis of disease cycles and epidemiological parameters to develop and evaluate efficient control strategies and forecasting models.

**Prerequisites:** PLPA 301, or PLPA 601, or equivalent, approval of instructor.

## PLPA 604 Plant Bacterial Diseases

**Credit 1. 1 Lecture Hour.**

Bacterial diseases of fruit and vegetable crops, field crops and ornamental plants; structure and function of plant pathogenic bacteria; dissemination of bacterial pathogens and methods of control.

**Prerequisite:** PLPA 301 or PLPA 601.

## PLPA 605 Molecular Plant Virology

**Credit 1. 1 Lecture Hour.**

Focus on biology and molecular genetics of plant viruses; historical information and recent developments discussed to illustrate how viruses establish an infection; control measures presented; uses as tools in biotechnology.

**Prerequisite:** PLPA 301 or PLPA 601.

## PLPA 606 Fungal Biology

**Credit 1. 1 Lecture Hour.**

Morphological and molecular systematic survey of kingdom of Fungi; emphasis on modern concepts and disease control.

**Prerequisite:** PLPA 301 or PLPA 601.

## PLPA 607 Pathogen Strategies

**Credit 1. 1 Lecture Hour.**

Molecular mechanisms that pathogens use to overcome innate immunity of the host plant; molecular events associated with the disease cycles of pathogens; pathogen-host-coevolution; pathogen virulence factors; pathogen countermeasures to plant defense mechanisms.

**Prerequisites:** PLPA 301 or PLPA 601.

## PLPA 608 Pathogen Perception and Signaling

**Credit 1. 1 Lecture Hour.**

Molecular and biochemical basis of pathogen recognition; pathogen signaling initiation and transduction in hosts.

**Prerequisite:** PLPA 301 or PLPA 601.

## PLPA 609 Defense Hormone Signals

**Credit 1. 1 Lecture Hour.**

Molecular and biochemical mechanisms of plant hormone-mediated defense responses to pathogen invasion; major classes of defense-related proteins, phytoalexins and antibacterial secondary metabolites and signal transduction pathways.

**Prerequisite:** PLPA 301 or PLPA 601.

## PLPA 610 Host Plant Resistance

**Credits 3. 3 Lecture Hours.**

Host plant resistance programs from the standpoint of the plant breeder, plant pathologist and entomologist; team taught with each discipline represented; roundtable discussion of assigned readings and lectures.

**Prerequisite:** Approval of instructor.

**Cross Listing:** SCSC 610 and ENTO 610.

## PLPA 611 Advanced Plant Pathology

**Credits 3. 3 Lecture Hours.**

Principles and concepts of plant pathogenesis, plant disease epidemiology, and plant disease management at the level of the whole plant and in plant populations; impact and control of significant plant diseases.

**Prerequisites:** PLPA 301 or equivalent; approval of instructor.

## PLPA 613 Advanced Plant Pathology Laboratory

**Credit 1. 3 Lab Hours.**

A laboratory course designed to demonstrate key components of the host-pathogen interaction and modern diagnostic and research techniques. Concurrent enrollment in PLPA 611 recommended.

**Prerequisite:** PLPA 301 or approval of instructor.

## PLPA 616 Methods in Molecular Biology of Plant-Microbe Interactions

**Credits 2. 2 Lecture Hours.**

Concepts and techniques used in molecular plant pathology to study the interactions between hosts and pathogens; focus on understanding the rationale for implementing certain procedures and the theoretical concepts underlying the methodology.

**Prerequisite:** Graduate classification.

## PLPA 619 Plant-Associated Microorganisms

**Credits 3. 3 Lecture Hours.**

Basic concepts and current topics in plant-microbe interactions including the diversity of plant-associated microorganisms; the plant as a microbial environment; endophytes; microbial roles in plant nutrition and fitness; uses of microorganisms for improved plant health and sustainable agriculture; microbial roles in food safety and future challenges; discussion of current literature.

**Prerequisites:** Basic plant biology or plant ecology is recommended; microbiology is helpful, but not required.

**Cross Listing:** HORT 619 and MEPS 619.

## PLPA 623 Diseases of Field Crops

**Credits 3. 2 Lecture Hours. 3 Lab Hours.**

Fundamental and practical aspects of more important and representative diseases of field crops; plant disease problems peculiar to extensive cultivation methods.

**Prerequisites:** PLPA 301 and PLPA 303.

## PLPA 626 Diagnosis of Plant Diseases

**Credits 2. 1 Lecture Hour. 3 Lab Hours.**

Techniques employed in field diagnosis of plant diseases; histological and microbiological studies to verify initial diagnosis.

**Prerequisite:** PLPA 625 or approval of instructor.

## PLPA 634 Turfgrass Pathology

**Credits 3. 3 Lecture Hours.**

Recognizing turfgrass problems and understanding biological mechanisms in the disease process; principles of disease management strategies.

**PLPA 657 Biotechnology for Biofuels and Bioproducts**

**Credits 3. 3 Lecture Hours.**

Biotechnology issues in developing bioenergy as a renewable energy source; emphasis on the three generations of bioenergy and enabling technologies; special topics include recent advances in bioenergy research, government policy, and industrial development.

**Prerequisite:** Graduate classification.

**PLPA 681 Seminar**

**Credit 1. 1 Lecture Hour.**

Reports and discussions of topics of current interest in plant pathology; review of literature on selected subjects.

**PLPA 684 Professional Internship**

**Credits 1 to 4. 1 to 4 Other Hours.**

Work-study program for on-the-job training. The student's major professor and job training supervisor will grade the individual.

**Prerequisite:** Graduate classification in Department of Plant Pathology and Microbiology.

**PLPA 685 Directed Studies**

**Credits 1 to 4. 1 to 4 Other Hours.**

Individual problems or research not pertaining to thesis or dissertation.

**Prerequisites:** PLPA 301 and PLPA 303; approval of instructor.

**PLPA 689 Special Topics in...**

**Credits 1 to 4. 1 to 4 Lecture Hours.**

Special topics in an identified area of plant pathology. May be repeated for credit.

**Prerequisite:** Approval of instructor.

**PLPA 690 Theory of Research**

**Credit 1. 1 Lecture Hour.**

Design and development of research theory, inquiry and methodology in various subfields of plant pathology and microbiology; includes examination of modern trends and advances, the analysis of research approaches, and the evaluation and interpretation of data using examples from current research literature. May be repeated for credit.

**Prerequisite:** Approval of instructor.

**PLPA 691 Research**

**Credits 1 to 23. 1 to 23 Other Hours.**

Original investigations in support of thesis or dissertation.