

PLPA - PLANT PATHOLOGY

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

Credits 2. 2 Lecture Hours. 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:** Graduate classification.

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

Credits 2. 2 Lecture Hours. 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:** Graduate classification.

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 2. 2 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:** Graduate classification.

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.