

PPA

Plant Pathology

**PPA 395 INDEPENDENT STUDY IN PLANT PATHOLOGY. (1-4)**

Independent study in Plant Pathology under the supervision of a faculty member. Prereq: Consent of appropriate instructor.

**PPA 400G PRINCIPLES OF PLANT PATHOLOGY. (3)**

To present students with the principles of plant pathology. The causes, effects, control and nature of plant diseases will be studied; the laboratory will expose students to common diseases and pathogens discussed in lecture. Emphasis will be given to diseases important in Kentucky. Lecture, two hours; laboratory, two hours. Prereq: BIO 148 and BIO 152, or BIO 210/PLS 210, or consent of instructor.

**PPA 500 PHYSIOLOGY OF PLANT HEALTH AND DISEASE. (3)**

First-semester graduate students and upper class undergraduates will gain a basic understanding of physiology, structure and development of plants and their associated fungi, viruses, bacteria and nematodes, and to appreciate how interactions with symbionts and pathogens influence plant health and disease. Prereq: PPA 400G (can be concurrent).

**PPA 600 CRITICAL METHODS IN PLANT-MICROBE INTERACTIONS. (2)**

The course will provide instruction on experimental methods commonly used in Plant-Microbe Interaction and will train students in critical thinking, grant writing, scientific ethics and seminar presentation. Prereq: PPA 500.

**PPA 601 SPECIAL TOPICS IN MOLECULAR AND CELLULAR GENETICS. (1)**

Each semester five distinguished scientists visit the UK campus to deliver a series of three formal lectures each and participate in numerous informal contacts with graduate students. The emphasis is on the presentation of the most current advances (often unpublished) in selected topics in molecular and cellular genetics. May be repeated to a maximum of six credits. (Same as BIO/BCH/MI/PLS 601.)

**PPA 609 PLANT BIOCHEMISTRY. (3)**

The course will consider the chemical constituents of plants (with emphasis on biologically or nutritionally significant compounds unique to plants), their biosynthesis, contribution to key metabolic and defense processes and the regulation of their synthesis. Included will be discussions of photosynthesis, carbohydrates, lipids, isoprenoids and phenylpropanoids, nitrogen fixation, nitrogen and sulfur reduction and assimilation, alkaloids and additional secondary compounds, frontiers in plant biochemistry. Prereq: BCH 607 or equivalent or consent of instructor. (Same as BCH/PLS 609.)

**PPA 620 FUNGICIDES, ADVANCED CONCEPTS. (3)**

An in-depth exploration of diverse factors that affect field performance of fungicides, as well as environmental and toxicological dimensions of these disease-control chemicals. Prereq: Principles of Plant Pathology (PPA 400G) or the equivalent, or permission of the instructor.

**PPA 630 INTRODUCTION TO GENETICALLY ENGINEERED CROPS, RISKS AND BENEFITS I. (1)**

This is Part I of a two-part series of one-credit, graduate-level courses exploring GMO (genetically engineered) crops. In Part I (PPA 630), students will be introduced to what they are; and how GMO crops are similar to, and different from, other crops. In Part II (PPA 631), students will explore perceived risks and benefits to the use of these technologies. Prereq: A Bachelor's degree in any subject; a college-level course in biology or permission of the instructor.

**PPA 631 INTRODUCTION TO GENETICALLY ENGINEERED CROPS, RISKS AND BENEFITS II. (1)**

This is Part II of a two-part series of one-credit, graduate-level courses exploring GMO (genetically engineered) crops. In Part I (PPA 630), students will be introduced to what they are; and how GMO crops are similar to, and different from, other crops. In Part II (PPA 631), students will explore perceived risks and benefits to the use of these technologies. Prereq: A Bachelor's degree in any subject; a college-level course in biology or permission of the instructor.

**PPA 640 IDENTIFICATION OF PLANT DISEASES. (3)**

Recognition and identification of plant diseases and their causes and development. The course is designed to give students practical experience in dealing with a wide array of plant diseases, symptom expressions, causal agents and interactions with environmental factors encountered in the difficult task of identifying plant diseases. May be repeated to a maximum of nine credits. Lecture, one hour; laboratory, six hours. Prereq: PPA 400G or equivalent or consent of instructor. (Same as PLS 640.)

**PPA 641 PLANT DISEASE, POPULATION BIOLOGY, AND BIOTECHNOLOGY. (1)**

To understand implications of deployment of biotechnology and other disease management practices at the level of host and pathogen populations. Prereq: PPA 400G.

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- PPA 650 FUNGAL BIOLOGY. (3)**  
The Fungal Biology course introduces basic mycological concepts, including systematics, anatomy, cell biology, metabolism, developmental biology, ecology, population genetics, and reproduction. There is a focus on modern molecular approaches to these concepts. Students will also learn about the use of fungi in research and biotechnology. Prereq: Undergraduate courses in biology, genetics, and chemistry.
- PPA 670 PLANT BACTERIOLOGY. (1)**  
Bacterial mechanisms underlying pathogenesis and virulence in interactions causing plant disease, and symbiotic compatibility in mutualisms. Prereq: PPA 400G, PPA 500, PPA 600, PPA 640 can be concurrent.
- PPA 671 ADVANCED PLANT VIROLOGY. (2)**  
Molecular basis of plant virus infection of plants. Virus replication and spread. Virus control strategies. Prereq: PPA 400G, PPA 500, PPA 600.
- PPA 673 ADVANCED PLANT DISEASE RESISTANCE. (1)**  
Bacterial mechanisms underlying pathogenesis and virulence in interactions causing plant disease, and symbiotic compatibility in mutualisms. Prereq: PPA 400G, PPA 500, PPA 600.
- PPA 700 PLANT PATHOLOGY LABORATORY VISITS. (1-3)**  
Semester-long rotations in Plant Pathology laboratories other than the students' "home lab". An opportunity will be provided to apply new approaches that are utilized in those labs to the students' research problems. May be repeated to a maximum of six credit hours.
- PPA 748 MASTER'S THESIS RESEARCH. (0)**  
Half-time to full-time work on thesis. May be repeated to a maximum of six semesters. Prereq: All course work toward the degree must be completed.
- PPA 749 DISSERTATION RESEARCH. (0)**  
Half-time to full-time work on dissertation. May be repeated to a maximum of six semesters. Prereq: Registration for two full-time semesters of 769 residence credit following the successful completion of the qualifying exams.
- PPA 767 DISSERTATION RESIDENCY CREDIT. (2)**  
Residency credit for dissertation research after the qualifying examination. Students may register for this course in the semester of the qualifying examination. A minimum of two semesters are required as well as continuous enrollment (Fall and Spring) until the dissertation is completed and defended.
- PPA 768 RESIDENCE CREDIT FOR THE MASTER'S DEGREE. (1-6)**  
May be repeated to a maximum of 12 hours.
- PPA 769 RESIDENCE CREDIT FOR THE DOCTOR'S DEGREE. (0-12)**  
May be repeated indefinitely.
- PPA 770 PLANT PATHOLOGY SEMINAR. (1)**  
Reports and discussion of problems and investigations of problems in plant pathology. May be repeated to a maximum of four credits.
- PPA 784 SPECIAL PROBLEMS IN PLANT PATHOLOGY. (1-3)**  
May be repeated to a maximum of nine credits. Prereq: PPA 400G or equivalent or consent of instructor.
- PPA 794 RESEARCH IN PLANT PATHOLOGY. (1-9)**  
May be repeated to a maximum of 30 credits. Prereq: PPA 400G or equivalent or consent of instructor.
- PPA 799 TEACHING IN PLANT PATHOLOGY. (1-2)**  
Discussion of, and experience with, various instructional techniques in plant pathology; effective preparation, presentation and evaluation of lectures and laboratories focusing on plant diseases; practical experience in lectures, teaching laboratories and/or mentoring undergraduate research projects. May be repeated to a maximum of four credits. Prereq: PPA 400G or equivalent.