

PLANT PATHOLOGY

Degree Requirements

Master of Science (M.S.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-600 Research Degree Policies. (<https://gradschool.psu.edu/graduate-education-policies/>)

The Master of Science degree program in Plant Pathology leads students either to the development of special proficiencies in Plant Pathology, which will allow the individual to directly enter a professional career, or to the development of a basic knowledge of the discipline, allowing for advancement to the Ph.D. degree. M.S. degree students will be introduced to the broad aspects of the field of plant pathology, including:

- exposure to the various causal agents of plant disease and the diseases they incite;
- diseases of current and classical importance affecting a wide range of crop plants;
- a variety of techniques used to isolate, characterize, and identify causal agents of plant disease; and
- an appreciation for the relationship between plant pathology and other biological and physical sciences.

A minimum of 30 credits at the 400, 500, 600, or 800 level is required, with at least 18 credits in the 500 and 600 series combined.

Code	Title	Credits
Required Courses		
PPEM 405	Microbe-Plant Interactions: Plant Disease and Biological Control	3
PPATH 502	Plant Disease Diagnosis	3
PPATH 505	Fundamentals of Phytopathology	4
PPATH 522	Professional Development & Ethics in Plant Pathology	1
PPATH 590	Colloquium ¹	2

ADDITIONAL COURSES

All M.S. students must take a minimum of 9 total credits from the following two lists, as described.

<i>Microbial Groups (choose at least 6 credits):</i>		6
PPEM 416	Plant Virology: Molecules to Populations	
PPEM 417W	Mechanisms of Bacterial Pathogenesis in Plants	
PPEM 425	Biology of Fungi	
<i>Microbial Interactions and the Environment (choose at least 3 credits):</i>		3
PPEM 412	Turfgrass Disease Management	
	or PPEM 412	
PPEM 440	Introduction to Microbiome Analysis	
PPEM 454	Virus Ecology	
PPEM 456	Applied Microbial Ecology	
AGECO 457	Principles of Integrated Pest Management	
PPATH 533	Molecular Genetics of Plant-Pathogen Interactions	
PPATH 542	Epidemiology of Plant Diseases	
AGBIO 802	Plant Protection: Responding to Introductions of Threatening Pests and Pathogens	

Electives

As approved by the thesis adviser, M.S. students must choose an additional two credits of 400, 500, 600 or 800 level courses in PPEM, PPATH or a related field. 2

Culminating Experience ²

PPATH 600	Thesis Research	6
	or PPATH 610	Thesis Research Off Campus

Total Credits 30

1 All students are required to register for and participate in PPATH 590 (1 credit Pass/Fail) for all semesters enrolled. No more than two (2) credits of PPATH 590 may count towards the Master's degree.

2 A maximum of 6 thesis credits can be applied to the 18 credits required at the 500-600 level.

Students may complete additional course work at other levels as required and/or approved by their committee.

Equivalent courses taken in a previous program may be substituted for M.S. course requirements, by approval of the Program. However, equivalent courses cannot be applied to the 30-credit requirement.

Master's degree students must prepare and present seminars in the departmental PPATH 590, which will evaluate English communication skills. During their studies, Master's degree students may have an opportunity to assist in teaching a disciplinary subject.

All Master's degree students must write a thesis proposal which must be accepted by the adviser(s), committee members, and the Head of the Graduate Program. All Master's degree students must write a thesis which must be accepted by the adviser(s), committee members, the Head of the Graduate Program, and the Graduate School. The student must present and pass a final oral thesis defense.

Doctor of Philosophy (ph.D.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-600 Research Degree Policies. (<https://gradschool.psu.edu/graduate-education-policies/>)

Code	Title	Credits
Required Courses		
PPEM 405	Microbe-Plant Interactions: Plant Disease and Biological Control	3
PPATH 502	Plant Disease Diagnosis	3
PPATH 505	Fundamentals of Phytopathology	4
PPATH 522	Professional Development & Ethics in Plant Pathology	1
PPATH 590	Colloquium ¹	2
PPATH 602	Supervised Experience in College Teaching ²	1

ADDITIONAL COURSES

All Ph.D. students must take a minimum of 6 total credits from the following two lists, taking a minimum of 3 each as described.

<i>Microbial Groups (choose at least 3 credits):</i>		3
PPEM 416	Plant Virology: Molecules to Populations	
PPEM 417W	Mechanisms of Bacterial Pathogenesis in Plants	
PPEM 425	Biology of Fungi	
<i>Microbial Interactions and the Environment (choose at least 3 credits):</i>		3
PPEM 412	Turfgrass Disease Management	
	or PPEM 412WC	

PPEM 440	Introduction to Microbiome Analysis	
PPEM 454	Virus Ecology	
PPEM 456	Applied Microbial Ecology	
AGECO 457	Principles of Integrated Pest Management	
PPATH 533	Molecular Genetics of Plant-Pathogen Interactions	
PPATH 542	Epidemiology of Plant Diseases	
AGBIO 802	Plant Protection: Responding to Introductions of Threatening Pests and Pathogens	
Culminating Experience		
PPATH 600	Thesis Research	6
or PPATH 610	Thesis Research Off Campus	
Total Credits		26

¹ Ph.D. students enrolled in the PPATH graduate program must enroll in PPATH 590 every semester until they have passed their comprehensive exam. Two credits of PPATH 590 can be counted toward the degree requirements.

² Students may take up to 3 credits of PPATH 602 Supervised Experience in College Teaching.

Students may enroll in other courses tailored to the individual by the student's Ph.D. committee.

Ph.D. students must prepare and present seminars in the departmental PPATH 590, which will evaluate English communication skills. During their studies, Ph.D. students will have an opportunity to assist in teaching a disciplinary subject.

All doctoral students must pass a qualifying examination, a comprehensive examination, and a final oral examination (the dissertation defense). To earn the Ph.D. degree, doctoral students must also write a dissertation proposal and a dissertation. The dissertation proposal must be accepted by the adviser(s), committee members, and the head of the graduate program. The dissertation must be accepted by the adviser(s), committee members, and the head of the graduate program, and the Graduate School. The student must present and pass a dissertation defense.