

PLANT MEDICINE

Program Information

Coordinator: A.C. Hodges

Campus Program

The Doctor of Plant Medicine (DPM) program is an intensive doctorate-level graduate level training program for students interested in plant health diagnosis and management. Requirements for the degree can be found in the Graduate Degrees (<http://gradcatalog.ufl.edu/graduate/degrees/>) section of this catalog.

DPM students complete rigorous coursework and intensive internships. Only DPM students jointly enrolled in one of our discipline department M.S. programs complete a thesis. DPM students often participate in applied research within laboratory programs, and may participate in the publication of peer-reviewed scientific and extension papers. More information regarding the latest policies for the DPM program is available in the DPM graduate handbook (http://dpm.ifas.ufl.edu/wp-content/uploads/2017/11/DPM_Handbook_2017.pdf).

The DPM program is a partnership among faculty mentors and teaching faculty within the following primary departments:

- Entomology and Nematology Department
- Department of Plant Pathology
- Agronomy Department
- Horticulture Sciences Department
- Environmental Horticulture Department
- Soil and Water Sciences Department
- Food Science and Human Nutrition Department

Distance Program

The College of Agricultural and Life Sciences offers a distance education program leading to the D.P.M. degree for highly qualified students.

The D.P.M. degree is awarded after a 3- to 4-year program of graduate student. Foreign languages are not required. The distance education program leading to a D.P.M. degree is administered by the Entomology and Nematology Department, College of Agricultural and Life Sciences, and the Graduate School.

Admission: Students must meet the following minimum requirements:

Entrance requirements:

- A graduate degree (Master's or Doctoral) with a concentration in plant health science, plant pathology, agronomy, horticulture, environmental horticulture, forestry, entomology, nematology, soil science or a similar field.
- A passing score for the Certified Crop Advisor (CCA) exam administered by the Agronomy Society of America (ASA).
- Completion of at least two years of full-time work in a professional job associated with the Plant Doctor (DPM/H) profession. Examples of professional jobs associated with the Plant Doctor profession include: crop consultant, industry scientist, extension specialist, diagnostician, identifier, survey specialist, plant pest risk analyst, plant health technician, or instructor.
- A minimum score of a 300 on the Graduate Record Examination (GRE). Verbal and quantitative portions of the GRE should be

approximately 150 each. Exceptions to the minimum may be considered by the DPM admissions committee.

- International applicants must also have a TOEFL score above 80.
- A graduate (Master's or Doctoral) grade point average of 3.0 or higher.
- A passing score (80% or higher) on the Plant Pathology Written Comprehensive Exam. The exam must be completed in Gainesville, Florida.

Course requirements: Students enter the program with a Master's or Doctoral degree and must earn 60 credits. Transfer of graduate credits from another graduate degree are not allowed for the distance education program. All D.P.M. students must complete two substantial 3-credit internships. Signed approval by a student's Committee and the D.P.M. Director is required prior to registering for substantial internship credits.

Comprehensive examination: Both written and oral comprehensive examinations are required of all D.P.M. students. The written examination has three sections:

- entomology/nematology,
- plant pathology, and
- plant/soil science.

Faculty from the appropriate disciplines are appointed by the D.P.M. Program Director and D.P.M. Competency Exam Coordinators to develop and grade the final written examination. Students enrolled in the distance education program must pass the plant pathology written competency area exam prior to admission. The two remaining sections of the written exam may be taken independently throughout the program at the discretion of the supervisory committee and the D.P.M. Director. Students are encouraged to complete the exam prior to the last full year of the D.P.M. program and their anticipated semester of graduation. Students should also complete the D.P.M. Competency Area Exams before the completion of a substantial internship. After a student passes all three sections of the final written examination (80% or higher is considered a passing grade), the supervisory committee administers an oral examination that tests the student's ability to diagnose and manage plant health problems. A student who fails to pass a comprehensive examination may retake an exam once with the recommendation of their supervisory committee.

For more information, please see the DPM website: <http://dpm.ifas.ufl.edu>.

Degrees Offered

Degrees Offered with a Major in Plant Medicine

- Doctor of Plant Medicine
 - without a concentration
 - concentration in Tropical Conservation and Development

Requirements for these degrees are given in the Graduate Degrees (<http://gradcatalog.ufl.edu/graduate/degrees/>) section of this catalog.

Courses

Agronomy Departmental Courses

Code	Title	Credits
AGR 5230C	Florida Grassland Agroecosystems	4
AGR 5266C	Field Plot Techniques	3
AGR 5277C	Tropical Crop Production	3

AGR 5307	Molecular Genetics for Crop Improvement	3
AGR 5321C	Genetic Improvement of Plants	3
AGR 5444	Ecophysiology of Crop Production	3
AGR 5511	Crop Ecology	3
AGR 6233	Tropical Grassland Agroecosystems	3
AGR 6237C	Research Techniques in Forage Evaluation	3
AGR 6305	Plant Chromosomes and Genomes	3
AGR 6322	Advanced Plant Breeding	3
AGR 6325L	Plant Breeding Techniques	1
AGR 6422C	Environmental Crop Nutrition	3
AGR 6442C	Physiology of Agronomic Plants	4
AGR 6905	Agronomic Problems	1-5
AGR 6913	Supervised Extension-Agronomy	3
AGR 6932	Topics in Agronomy	1-3
AGR 6933	Graduate Agronomy Seminar	1
AGR 6940	Supervised Teaching	1-5
AGR 6971	Research for Master's Thesis	1-15
AGR 7979	Advanced Research	1-12
AGR 7980	Research for Doctoral Dissertation	1-15
ALS 5155	Global Agroecosystems	3
ALS 5932	Special Topics	1-4
ALS 6031	Project Team Research: Building Skills in Agrobiology	3
IPM 5305	Principles of Pesticides	3
PLS 5625	Upland Invasive Plant Management	3
PLS 5632C	Integrated Weed Management	3
PLS 5633	Aquatic Plant Management	3
PLS 6626	Invasive Plant Ecology	3
PLS 6655	Plant/Herbicide Interaction	3

Botany Courses

Code	Title	Credits
BOT 5225C	Plant Anatomy	4
BOT 5305	Paleobotany	3
BOT 5505C	Intermediate Plant Physiology	3
BOT 5655C	Physiological Plant Ecology	3
BOT 5685C	Tropical Botany	5
BOT 5695C	Ecosystems of Florida	3
BOT 5725C	Taxonomy of Vascular Plants	4
BOT 6566	Plant Growth and Development	3
BOT 6716C	Advanced Taxonomy	2
BOT 6726C	Principles of Systematic Biology	4
BOT 6905	Individual Studies in Botany	1-3
BOT 6910	Supervised Research	1-5
BOT 6927	Advances in Botany	1-3
BOT 6935	Special Topics	1-4
BOT 6936	Graduate Student Seminar	1-2
BOT 6971	Research for Master's Thesis	1-15
BOT 7979	Advanced Research	1-12
BOT 7980	Research for Doctoral Dissertation	1-15
PCB 5046C	Advanced Ecology	3
PCB 5338	Principles of Ecosystem Ecology	3
PCB 5356	Tropical Ecology	3
PLP 6656C	Fungal Biology	4

Entomology and Nematology Departmental Courses

Code	Title	Credits
ALS 5156	Agricultural Ecology Principles and Applications	3

ALS 6046	Grant Writing	2
ALS 6166	Exotic Species and Biosecurity Issues	3
ALS 6502C	Linear Models in Agriculture and Natural Resources	3
ALS 6935	Topics in Biological Invasions	3
ENY 5006	Graduate Survey of Entomology	3
ENY 5006L	Graduate Survey of Entomology Laboratory	1
ENY 5160C	Survey of Science with Insects	3
ENY 5212	Insects and Wildlife	3
ENY 5223C	Biology and Identification of Urban Pests	3
ENY 5226C	Principles of Urban Pest Management	3
ENY 5241	Biological Control	4
ENY 5332	Graduate Survey of Urban Vertebrate Pest Management	2
ENY 5405	Insects as Vectors of Plant Pathogens	3
ENY 5516	Turf and Ornamental Entomology	3
ENY 5566	Tropical Entomology	3
ENY 5567	Tropical Entomology Field Laboratory	2
ENY 5611	Immature Insects	4
ENY 5820	Insect Molecular Genetics	3
ENY 6166	Insect Classification	3
ENY 6203L	Insect Ecology Laboratory	1
ENY 6203	Insect Ecology	3
ENY 6206	Ecology of Vector-Borne Disease	3
ENY 6207	Ecology and Conservation of Pollinators	3
ENY 6248	Termite Biology and Control	2
ENY 6259	Global Change and Insect Declines	2
ENY 6401L	Insect Physiology Laboratory	1
ENY 6401	Insect Physiology	3
ENY 6406	Molecular Biology of Insects and Nematodes	3
ENY 6454	Behavioral Ecology and Systematics of Insects	3
ENY 6456C	Social Insects	3
ENY 6572	Apiculture I	3
ENY 6575	Apiculture II	3
ENY 6576	Honey Bee Biology	3
ENY 6591C	Advanced Mosquito Identification	3
ENY 6593	Advanced Mosquito Biology	3
ENY 6651C	Insect Toxicology	3
ENY 6665	Advanced Medical and Veterinary Entomology I	3
ENY 6665L	Advanced Medical and Veterinary Entomology Laboratory	1
ENY 6706	Forensic Entomology	3
ENY 6821	Insect Microbiology	3
ENY 6905	Problems in Entomology	1-4
ENY 6910	Supervised Research	1-5
ENY 6920L	Invasive Ant Boot Camp	1
ENY 6931	Entomology Seminar	1
ENY 6932	Special Topics in Entomology	1-2
ENY 6934	Selected Studies in Entomology	1-4
ENY 6940	Supervised Teaching	1-5
ENY 6942	Insect Diagnostics	1-3
ENY 6943	Entomology Internship	1-3
ENY 6944	Entomology Extension Internship	1-3
ENY 6945	Practical Work Experience in Entomology and Nematology	1-3
ENY 6971	Research for Master's Thesis	1-15
ENY 7979	Advanced Research	1-12
ENY 7980	Research for Doctoral Dissertation	1-15
IPM 6021	Insect Pest and Vector Management	3
NEM 5004C	Graduate Survey of Nematology	3

NEM 5707C	Plant Nematology	3
NEM 6101	Nematode Morphology and Anatomy	2
NEM 6101L	Nematode Morphology and Anatomy Lab	2
NEM 6102	Nematode Systematics and Molecular Phylogeny	2
NEM 6102L	Nematode Systematics and Molecular Phylogeny Laboratory	2
NEM 6103	Insect Parasitic Nematodes	2
NEM 6103L	Entomopathogenic Nematodes Laboratory	1
NEM 6201	Nematode Ecology	3
NEM 6708	Field Plant Nematology	2
NEM 6905	Problems in Nematology	1-4
NEM 6931	Nematology Seminar	1
NEM 6932	Special Topics in Nematology	1-4
NEM 6934	Selected Studies in Nematology	1-4
NEM 6940	Supervised Teaching	1-5
NEM 6942	Nematode Diagnostics	2
NEM 6943	Nematode Internship	1-3
NEM 6971	Research for Master's Thesis	1-15
NEM 7979	Advanced Research	1-12
NEM 7980	Research for Doctoral Dissertation	1-15
PMA 5205	Citrus Pest Management	3
PMA 6228	Field Techniques in Integrated Pest Management	2
FAS 6408	Aquaculture II	3
FAS 6416	Spatial Ecology and Modeling of Fish Populations	2
FAS 6905	Individual Study	1-6
FAS 6910	Supervised Research	1-5
FAS 6932	Special Topics in Fisheries and Aquatic Sciences	1-4
FAS 6933	Graduate Symposium	1
FAS 6935	Contemporary Problems in Fisheries and Aquatic Sciences	2
FAS 6940	Supervised Teaching	1-5
FAS 6971	Research for Master's Thesis	1-15
FAS 7979	Advanced Research	1-12
FAS 7980	Research for Doctoral Dissertation	1-15

Forest Resources and Conservation Program Courses

Code	Title	Credits
FNR 5072C	Environmental Education Program Development	3
FNR 5608	Research Planning	3
FNR 6061	Conflict and Collaboration in Natural Resources	3
FNR 6560	Intro to Bayesian Statistics for Life Sciences	3
FNR 6564	Ecohydrology	3
FOR 5157		3
FOR 5159		3
FOR 5435		3
FNR 6628	Watershed Management and Restoration	3
FNR 6669	Policy and Economics of Natural Resources	3
FOR 6005		3
FOR 6151		3
FOR 6154		3
FOR 6156		3
FOR 6164		3
FOR 6170		3
FOR 6215		3
FOR 6340		3
FOR 6543		3
FOR 6628		3
FOR 6665		3
FOR 6905		1-6
FOR 6910		1-5
FOR 6933		1
FOR 6934		1-4
FOR 6940		1-5
FOR 6971		1-15
FOR 7979		1-12
FOR 7980		1-15
PCB 5530	Plant Molecular Biology and Genomics	3
PCB 6528	Plant Cell and Developmental Biology	3
PCB 6555	Introduction to Quantitative Genetics	3
SUR 6377	Geospatial Application of UASs	3
SUR 6502C	Foundations of UAS Mapping	3
SUR 6940C	Practicum in UAS Mapping	3

School of Forest Resources and Conservation Courses

Geomatics Concentration Courses

Code	Title	Credits
GIS 6103	GIS Programming and Customization	3
GIS 6116	Geographic Information Systems Analysis	3
SUR 5365	Digital Mapping	3
SUR 5385	Remote Sensing Applications	3
SUR 5386	Image Processing for Remote Sensing	3
SUR 5525	Least Squares Adjustment Computations	3
SUR 6395	Topics in Geographic Information Systems	3
SUR 6535	GPS-INS Integration	3
SUR 6905	Special Problems in Geomatics	1-6
SUR 6934	Topics in Geomatics	1-4

Fisheries and Aquatic Sciences Program Courses

Code	Title	Credits
FAS 5015	Aquaculture I	3
FAS 5203C	Biology of Fishes	4
FAS 5255	Diseases of Warmwater Fish	3
FAS 5276C	Field Ecology of Aquatic Organisms	4
FAS 5335C	Applied Fisheries Statistics	4
FAS 5407	Biology of Fishery and Aquaculture Invertebrates	3
FAS 5901	Scientific Thinking in Ecology	2
FAS 6154	Marine Adaptations: Environmental Physiology	3
FAS 6165	Fish and Crustacean Nutrition	3
FAS 6176	Algae Biology and Ecology	3
FAS 6256	Fish and Aquatic Invertebrate Histology	3
FAS 6272	Marine Ecological Processes	3
FAS 6273	Trophic Ecology of Fishes	3
FAS 6337C	Fish Population Dynamics	4
FAS 6339C	Advanced Quantitative Fisheries Assessment	4
FAS 6355C	Fisheries Management	4

Horticultural Sciences Departmental Courses

Code	Title	Credits
ALS 5932	Special Topics	1-4
HOS 5085C	Principles of Postharvest Horticulture	3
HOS 5242	Genetics & Breeding of Vegetable Crops	3

HOS 5330	Postharvest Technologies for Horticultural Crops	2
HOS 5505	Getting Published Horticulture	3
HOS 5555	Tropical Fruit Production and Research in Florida	3
HOS 5711	Phytochemicals in Food & Health	3
HOS 6201	Breeding Perennial Cultivars	3
HOS 6236	Molecular Marker Assisted Plant Breeding	3
HOS 6307	Horticultural Physiology	3
HOS 6331	Postharvest Biology	3
HOS 6345	Environmental Physiology	4
HOS 6355	Root and Rhizosphere Ecology	3
HOS 6412	Nutrition of Horticultural Crops	3
HOS 6545	Advanced Citriculture I	3
HOS 6905	Problems in Horticultural Science	1-4
HOS 6910	Supervised Research	1-5
HOS 6931	Horticultural Science Seminar	1
HOS 6932	Special Topics	1-4
HOS 6934	Professional Seminar Preparation	1
HOS 6940	Supervised Teaching	1-5
HOS 6941	Practicum in Horticultural Science	2-4
HOS 6971	Research for Master's Thesis	1-15
HOS 7979	Advanced Research	1-12
HOS 7980	Research for Doctoral Dissertation	1-15
PCB 5065	Advanced Genetics	4
PCB 5530	Plant Molecular Biology and Genomics	3
PCB 6528	Plant Cell and Developmental Biology	3
PCB 6910	Supervised Research	1-5
PCB 6937	Special Topics in Plant Molecular and Cellular Biology	1-4
PCB 6971	Research for Master's Thesis	1-15
PCB 7922	Journal Colloquy in Plant Molecular and Cellular Biology	1
PCB 7979	Advanced Research	1-12
PCB 7980	Research for Doctoral Dissertation	1-15
PLS 6635	Weed Management for Organic and Sustainable Cropping Systems	3
PLS 7979	Advanced Research	1-12
PLS 7980	Research for Doctoral Dissertation	1-15

Plant Pathology Departmental Courses

Code	Title	Credits
ALS 5932	Special Topics	1-4
ALS 6925	Integrated Plant Medicine	4
ALS 6931	Plant Medicine Program Seminar	1
PLP 5005C	General Plant Pathology	4
PLP 5115C	Citrus Pathology	3
PLP 6105	Applied Plant Disease Management	3
PLP 6223C	Viral Pathogens of Plants	3
PLP 6235C	Applied Bioinformatics in Plant Pathology	2
PLP 6241C	Bacterial Plant Pathogens	3
PLP 6245	Fastidious Bacteria and Plant Diseases	3
PLP 6262C	Fungal Plant Pathogens	3
PLP 6291	Plant Disease Diagnosis	3
PLP 6303	Host-Parasite Interactions II	3
PLP 6404	Epidemiology of Plant Disease	4
PLP 6502	Host-Parasite Interactions I	3
PLP 6621C	Applied Population Genetics of Microbes	3
PLP 6636	Frontiers in Plant Biotechnology	3
PLP 6656C	Fungal Biology	4
PLP 6701	Impact through Networks	2

PLP 6905	Problems in Plant Pathology	1-4
PLP 6910	Supervised Research	1-5
PLP 6921	Colloquium in Principles of Plant Pathology	1
PLP 6932	Seminar in Plant Pathology	1
PLP 6940	Supervised Teaching	1-5
PLP 6942	Professional Internship in Plant Disease Clinic	3
PLP 6971	Research for Master's Thesis	1-15
PLP 7946	Plant Pathology Internship	1-10
PLP 7979	Advanced Research	1-12
PLP 7980	Research for Doctoral Dissertation	1-15

Soil and Water Sciences Departmental Courses

Code	Title	Credits
AGG 5607	Communicating in Academia	3
AGG 6503	Nanotechnology in Food, Agriculture, and Environment	3
ALS 5155	Global Agroecosystems	3
CWR 6537	Contaminant Subsurface Hydrology	3
SWS 5050L	Soils for Environmental Professionals Laboratory	1
SWS 5050	Soils for Environmental Professionals	3
SWS 5115	Environmental Nutrient Management	3
SWS 5132	Tropical Soil Management	3
SWS 5182	Earth System Analysis	3
SWS 5208	Sustainable Agricultural and Urban Land Management	3
SWS 5224	Environmental Biogeochemistry	3
SWS 5234	Environmental Soil, Water, and Land Use	3
SWS 5246	Water Resource Sustainability	3
SWS 5247	Hydric Soils	2
SWS 5248	Wetlands and Water Quality	3
SWS 5305C	Soil Microbial Ecology	3
SWS 5308	Ecology of Waterborne Pathogens	3
SWS 5406	Soil and Water Chemistry	3
SWS 5424C	Soil Chemical Analysis	3
SWS 5551	Soils, Water, and Public Health	3
SWS 5605C	Environmental Soil Physics	3
SWS 5716C	Environmental Pedology	4
SWS 5721C	GIS in Land Resource Management	3
SWS 5805	Environmental Soil and Water Monitoring Techniques	3
SWS 6117	Fertilizer Technology and Use	3
SWS 6134	Soil Quality	3
SWS 6136	Soil and Nutrient Diagnostics for Agricultural Production	3
SWS 6209	Urban Soil and Water Systems	3
SWS 6323	Advanced Microbial Ecology	3
SWS 6366	Biodegradation and Bioremediation	3
SWS 6406	Soil Health and Data	3
SWS 6448	Biogeochemistry of Wetlands and Aquatic Systems	3
SWS 6454	Advanced Soil and Water Chemistry	3
SWS 6456	Advanced Biogeochemistry	3
SWS 6722	AI Modeling in Soil and Ecosystem Sciences	3
SWS 6804	Modeling Soil, Water, and Ecosystem Processes	3
SWS 6813C	Modeling Land Biogeochemistry	3
SWS 6905	Special Problems	1-4
SWS 6910	Supervised Research	1-5

SWS 6920	Journal Colloquium in Environmental Science	1
SWS 6931	Seminar	1
SWS 6932	Topics in Soils	1-4
SWS 6940	Supervised Teaching	1-5
SWS 6950	Professional Development in Soil, Water, and Ecosystem Sciences	2
SWS 6971	Research for Master's Thesis	1-15
SWS 6992	Aquatic Toxicology: Science and Applications	3
SWS 7979	Advanced Research	1-12
SWS 7980	Research for Doctoral Dissertation	1-15

College of Agricultural and Life Sciences Courses

Code	Title	Credits
ALS 5156	Agricultural Ecology Principles and Applications	3
ALS 5905	Individual Study	1-4
ALS 5932	Special Topics	1-4
ALS 6046	Grant Writing	2
ALS 6166	Exotic Species and Biosecurity Issues	3
ALS 6921	Colloquium on Plant Pests of Regulatory Significance	1
ALS 6925	Integrated Plant Medicine	4
ALS 6931	Plant Medicine Program Seminar	1
ALS 6935	Topics in Biological Invasions	3
ALS 6942	Principles of Plant Pest Risk Assessment and Management	3
ALS 6943	Internship in Plant Pest Risk Assessment and Management	1-10
ANS 6936	Graduate Seminar in Animal Molecular and Cell Biology	1-2
BCH 5045	Graduate Survey of Biochemistry	4
FNR 6933	Seminar	1
STA 6093	Introduction to Applied Statistics for Agricultural and Life Sciences	3
STA 6329	Matrix Algebra and Statistical Computing	3

Student Learning Outcomes

SLO 1: Knowledge

Prevention, Diagnosis and Management of Plant Health Problems

Master the subject matter and concepts related to the prevention, diagnosis and management of plant health problems of all types

SLO 2: Skills

Solve Plant Health Problems

Integrate the subject matter and concepts learned during their program of study to solve plant health problems.

SLO 3: Professional Behavior

Exhibit professionalism in the practice of plant medicine by maintaining client confidentiality, keeping up to date on plant health management practices through continuing education and seeking the assistance of their colleagues when necessary.