

From: [Elliot Slotnick](mailto:Elliot.Slotnick)
To: cogdell@math.ohio-state.edu
Cc: myers.663@gradsch.ohio-state.edu; [Soave, Melissa](mailto:Soave.Melissa); slotnick.1@gradsch.ohio-state.edu; [Smith, Randy](mailto:Smith.Randy); dorrance.1@osu.edu
Subject: Masters of Plant Health Management (MPHM)
Date: Monday, July 04, 2011 11:39:14 AM

Dear Jim,

I am writing to release and send forward from the Graduate Council's Curriculum Committee the semester converted program proposal for the delivery of a new terminal professional degree program at Ohio State, the Master's in Plant Health Management (MPHM). This is a joint degree offering from the programs in Plant Pathology and Entomology which, during the past year, was approved through Ohio State's internal processes including passage by the Graduate Council, CAA, the University Senate, and the Ohio State University Board of Trustees. Presently, the original quarter based version of this program proposal is working its way through the final stages of statewide approval through the processes of the Regents Advisory Council on Graduate Study (RACGS). I anticipate the program receiving its final statewide approval and degree authorization in early Fall, certainly well before the end of the calendar year.

The semester version of the program proposal represents a seamless transition in program planning from the originally submitted quarter version of the proposal. Students will not be matriculating in this program until after semester conversion takes place so there is no need for a transition plan for students. The Curriculum Committee gives this proposal its endorsement and found it to be in excellent shape. Indeed, the only "fault" it could find was the implicit range in total credit hours that should appear on CAA p. 14 where 30 hours should, in fact, read 30-32 when the credit hours are all actually totaled. We can live with that!

All Best,
elliot

Status: PENDING

PROGRAM REQUEST
Master in Plant Health Management

Last Updated: Myers,Dena Elizabeth
01/19/2011

Fiscal Unit/Academic Org	Plant Pathology - D1178
Administering College/Academic Group	Food, Agric & Environ Science
Co-administering College/Academic Group	
Semester Conversion Designation	New Program/Plan
Proposed Program/Plan Name	Master in Plant Health Management
Type of Program/Plan	Graduate degree program
Program/Plan Code Abbreviation	PLHLTHM
Proposed Degree Title	Master in Plant Health Management

Credit Hour Explanation

Program credit hour requirements		A) Number of credit hours in current program (Quarter credit hours)	B) Calculated result for 2/3rds of current (Semester credit hours)	C) Number of credit hours required for proposed program (Semester credit hours)	D) Change in credit hours
Total minimum credit hours required for completion of program				30	
Required credit hours offered by the unit	Minimum			16	
	Maximum			18	
Required credit hours offered outside of the unit	Minimum			14	
	Maximum			16	
Required prerequisite credit hours not included above	Minimum			0	
	Maximum			0	

Program Learning Goals

Note: these are required for all undergraduate degree programs and majors now, and will be required for all graduate and professional degree programs in 2012. Nonetheless, all programs are encouraged to complete these now.

Program Learning Goals

- The MPH is an applied graduate degree for practicing professionals and others who want to enhance their professional competency in pathogen and pest management of agricultural and urban landscapes. Upon completion of the program the student will:
- Understand the adverse effects of pathogens, pests, and other factors influencing plant health beyond that acquired in a bachelor's degree program.
- Achieve a professional competency in assessing and applying plant health management strategies in agricultural systems and managed and natural landscapes/ecosystems.
- Achieve an ethical framework for inquiry and action in science and society that includes entrepreneurship and business; collaboration, political and community engagement; and environmental stewardship.
- Develop critical thinking and problem solving skills through educational and training experiences in plant health management.
- Demonstrate decision making and communication skills appropriate for a professional environment.

Assessment

Status: PENDING

PROGRAM REQUEST
Master in Plant Health Management

Last Updated: Myers,Dena Elizabeth
01/19/2011

Assessment plan includes student learning goals, how those goals are evaluated, and how the information collected is used to improve student learning. An assessment plan is required for undergraduate majors and degrees. Graduate and professional degree programs are encouraged to complete this now, but will not be required to do so until 2012.

Is this a degree program (undergraduate, graduate, or professional) or major proposal? Yes

Does the degree program or major have an assessment plan on file with the university Office of Academic Affairs? No

DIRECT MEASURES (means of assessment that measure performance directly, are authentic and minimize mitigating or intervening factors)

Standardized tests

- Local comprehensive or proficiency examinations

Classroom assignments

- Embedded testing (i.e. specific questions in homework or exams that allow faculty to assess students' attainments of a specific learning goal)
- Other classroom assessment methods (e.g., writing assignments, oral presentations, oral exams)

Evaluation of a body of work produced by the student

- Practicum, internship or research evaluation of student work
- Capstone course reports, papers, or presentations

INDIRECT MEASURES (means of assessment that are related to direct measures but are steps removed from those measures)

Surveys and Interviews

- Student survey
- Alumni survey
- Employer feedback or survey
- Student evaluation of instruction
- Student interviews or focus groups

Additional types of indirect evidence

- Job or post-baccalaureate education placement
- Student or alumni honors/recognition achieved
- External program review
- Curriculum or syllabus review

USE OF DATA (how the program uses or will use the evaluation data to make evidence-based improvements to the program periodically)

- Meet with students directly to discuss their performance
- Analyze and discuss trends with the unit's faculty
- Analyze and report to college/school
- Make improvements in curricular requirements (e.g., add, subtract courses)
- Make improvements in course content
- Make improvements in course delivery and learning activities within courses
- Make improvements in learning facilities, laboratories, and/or equipment
- Periodically confirm that current curriculum and courses are facilitating student attainment of program goals
- Benchmark against best programs in the field

Program Specializations/Sub-Plans

If you do not specify a program specialization/sub-plan it will be assumed you are submitting this program for all program specializations/sub-plans.

Pre-Major

Status: PENDING

PROGRAM REQUEST
Master in Plant Health Management

Last Updated: Myers,Dena Elizabeth
01/19/2011

Does this Program have a Pre-Major? No

Attachments

- Program Learning Goals 11-18-10.docx: MPHMLearningOutcomes11-19-10
(Other Supporting Documentation. Owner: Ellis,Sarah Dee)
- MPHM Program Proposal 11-30-10.pdf: MPHMProgramProposal11-30-10
(Program Proposal. Owner: Ellis,Sarah Dee)
- MPHM Curricular Matrix 11-30-10adcwds.docx: MPHMCurricularMatrix11-30-10
(Curricular Map(s). Owner: Ellis,Sarah Dee)

Comments

- Joint with the Department of Entomology.
This program is currently being approved in the quarters system as a new program, therefore it is not in the system.
This request states it is 'New' because of this. *(by Ellis,Sarah Dee on 11/19/2010 10:38 AM)*

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Ellis,Sarah Dee	11/19/2010 04:17 PM	Submitted for Approval
Revision Requested	Ellis,Sarah Dee	11/22/2010 10:43 AM	Unit Approval
Submitted	Ellis,Sarah Dee	11/22/2010 10:45 AM	Submitted for Approval
Approved	Mitchell,Thomas Kenneth	11/22/2010 02:53 PM	Unit Approval
Revision Requested	Stokoe,Laurie Anne	11/29/2010 03:22 PM	College Approval
Submitted	Ellis,Sarah Dee	12/08/2010 04:02 PM	Submitted for Approval
Approved	Mitchell,Thomas Kenneth	12/08/2010 05:17 PM	Unit Approval
Approved	Stokoe,Laurie Anne	01/14/2011 04:08 PM	College Approval
Approved	Myers,Dena Elizabeth	01/19/2011 10:15 AM	GradSchool Approval
Pending Approval	Soave,Melissa A	01/19/2011 10:15 AM	CAA Approval



Department of Plant Pathology

201 Kottman Hall
2021 Coffey Road
Columbus, OH 43210-1087

Phone (614) 292 -1375
Fax (614) 292 - 4455

November 18, 2010

Office of Academic Affairs
203 Bricker Hall
190 North Oval Mall
Columbus, OH 43210

Dear Office of Academic Affairs,

Currently the Department of Plant Pathology consists of 4 programs: Minor in Plant Pathology, Major in Plant Health Management, Master of Science in Plant Pathology, and Doctorate of Plant Pathology. All programs will remain in the semester system with modifications to each and the addition of a new major. The Department of Entomology consists of 4 programs: Minor in Entomology, Major in Entomology, Master of Science in Entomology, and Doctorate in Entomology. All programs will be offered in Entomology in the semester system with modifications to each. Both Departments will offer a joint undergraduate major in Plant Health Management aimed at preparing students for plant health management careers in the agricultural and environmental sciences with an applied emphasis.

The following document is the proposed professional tagged Master in Plant Health Management which is also a joint offering from the Department Plant Pathology and Department of Entomology within the College of Food, Agricultural, and Environmental Sciences. This program is currently under review by the Board of Regents. For the semester conversion, this Masters will require 30 credit hours, including a suite of core courses designed to provide an interdisciplinary approach in Plant Pathology, Entomology, Crop Physiology, Soil Fertility and Weed Science. It will provide students, who have a B.S. degree in related science, with the knowledge and skills to acquire a deeper understanding of agricultural systems and how crop health can be negatively impacted by biotic and abiotic agents as well as how to manage these agents. This program will also provide opportunities for students to effectively communicate scientific writing and oral presentations for the practicing professions; quantitative skills to assess plant health management practices; and professionalism through successful completion of an internship experience.

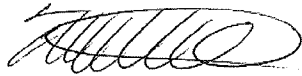
Students will be closely advised by faculty and staff in both departments. It will be important for the students to work closely with faculty to design a plan that augments their expertise from their B.S. degree and fits their future career goals.

In the development phase of the program, input was sought and will be sought again for review of semester curriculum. Input was obtained from the faculty of Departments of Plant Pathology and Entomology, the Extension Advisory Committee, industry leaders in Ohio. A advisory committee for

this program will be established that consists of Industry and government stakeholders who are most likely hire professionals with this degree.

Faculty and staff from each department have met several times, both via conference calls and email to discuss the major curriculum and strategy for semester conversion. In addition, conference calls and phone calls with related majors to compare changes in course offerings were also made to ensure that the semester conversion would not impact the total course offering but in fact enhanced it. Collectively, the two departments developed the learning outcomes, curriculum, transition plans, assessment plan, and a 2-year plan. The proposal was sent to all faculty in both departments for review. A vote was conducted by the faculty in the Department of Plant Pathology on November 17, 2010 resulting in a unanimous (13/13) approval. Subsequently we forwarded the proposal to the College of Food, Agricultural, and Environmental Sciences for review.

Sincerely,



Dr. Thomas Mitchell
Academic Affairs Committee Chair
Department of Plant Pathology
Assistant Professor

Cc: Dr. Anne Dorrance, Chair, Tagged Masters in Plant Health Management Ad Hoc Committee
Dr. David Shetlar, Dept. of Entomology
Dr. Celeste Welty, Dept. of Entomology
Sarah Ellis, Lecturer and Semester Conversion Coordinator

19 November 2010



Department of Entomology
The Ohio State University
2501 Carmack Road
Columbus, OH 43210-1065
614-292-3762

Office of Academic Affairs
203 Bricker Hall
190 North Oval Mall
Columbus, OH 43210

From: David Shetlar (for the Department of Entomology & Curriculum Committee)

Re: *Support for the Masters of Plant Health Management MPH M quarter to semester conversion and semester version of the program*

Since the Entomology Curriculum Committee was not able to present the documents of the MPH M conversion from quarters to semesters and semester versions at a faculty meeting, I forwarded the documents as an attachment to all our faculty with a request to review the documents and vote as to whether they support or not support the program as presented. I have received back 15 votes to accept and support the program as presented and two faculty (one is out of state and the other is out of the country) have not voted.

The overwhelming comments are for strong support of this program and many again expressed their gratitude to Plant Pathology for making this program a truly interdisciplinary effort! Two faculty did point out that there are some minor changes being considered for our graduate-level entomology courses that will be offered under the semester system, but these should not have a significant affect on the content or offerings that we have listed in the current MPH M program.

Sincerely,

David J. Shetlar, PhD
Professor of Urban Landscape Entomology

Master in Plant Health Management

Rationale for proposed program change and description of how changes will benefit students and enhance program quality.

The Master in Plant Health Management curriculum is currently pending and has received approval from the Board of Trustees at its Meeting on October 29, 2010. This is now moving forward in the external approval process related to the Ohio Board of Regents.

This curriculum is interdisciplinary by design and thus will give students a great deal of flexibility in additional courses beyond the core. This curriculum is also designed to provide opportunities for non-traditional students with night courses, weekend intensive labs, summer classes, and specialized internship courses. There are existing courses in The Department of Plant Pathology (PLNT PTH 6193 Individual Studies, and PLNT PTH 8902 Mentored Extension/Outreach in Plant Pathology) as well as (ENTOMOL 6193 Individual Study) in the Dept. of Entomology that are well suited for students pursuing this degree.

The Master of Plant Health Management program was re-designed following consideration of the learning objectives. Students will take core courses which were selected specifically for them to acquire the skills necessary to manage plant diseases and insects in integrated systems. In addition, courses which will provide a proficiency in basic plant health (soil fertility and Crop Physiology and Production), weed ecology, as well as experimental design and statistics. Students in this program are all required to complete an Internship or directed study in their specific area (Entomology or Plant Pathology), which may also be a mentored experience in Extension. We interpret internship to include working in applied research laboratories in University setting; research and development programs in industry as well as diagnostic clinics.

Students also have the opportunity to select from a list to fulfill 2 to 5 credit hours of electives. These electives encompass a wide variety of topic areas that the practicing professionals may encounter in their subsequent career: Agricultural business classes from Agricultural, Environmental and Development Economics; Extension education, planning courses in the Dept. of Human Community and Resource Development, soils classes from the School of Natural Resources, Advanced courses in plant breeding, plant physiology and weed ecology from Dept. of Horticulture and Crop Science.

The driving factor in re-designing this degree was to provide a solid comprehensive interdisciplinary Plant Health Management curriculum to prepare students to matriculate into positions in industry, government, or extension in accordance with our learning objectives.

The MPH M degree is a non-thesis degree that will be in addition to the Plan B non-thesis option currently available to students pursuing the Master of Science in the Plant Pathology or Entomology Graduate Programs. The non-thesis options are still available for students who wish to pursue specific M.S. degrees in the Plant Pathology or Entomology programs which are not covered by the MPH M program or a research-oriented degree leading to a thesis. The MPH M will be a separate degree program that students will select for its theory-to-practice nature.

Students graduating from this program will have the expertise to practice integration of the key scientific concepts spanning diagnostics to integrated disease and pest management. While there are similarities between the undergraduate major in Plant Health Management, the Major in Plant Pathology, and the Major in Entomology, this tagged Masters in Plant Health Management,

will provide an applied graduate degree for practicing professionals and others. The target audience for the proposed program includes: extension educators, vocational agricultural teachers, technical specialists with state and federal agencies (e.g. Animal and Plant Health Inspection Service, USDA Forest Service, State Plant Industry Depts.), agriculture business industry (e.g. seed and agricultural chemical company), certified crop consultants/advisors, agriculture retailers/dealers, landscape arborists and foresters, and governmental and non-governmental organizations involved in agriculture in developing countries (e.g. Oxfam, Peace Corps).

Students will have several opportunities to develop professional communication skills that are essential to be successful in today's Agricultural Business Environment. PLNTPH 603 (Semester PLNTPH 5603) is a writing course. PLNTPH 614, Diseases of Field Crops will incorporate a report writing section, in which students are provided datasets to interpret, much like company agronomists and derive conclusions based on the datasets. Written and oral reports will be required for students to assess their internship experience. More importantly, the final exam will provide students an opportunity to demonstrate their expertise in their specific area of interests related to plant health.

A key component of success will be job placement as well as job retention for students that earn the Masters in Plant Health Management. Another component of success will be how well these students integrate into the Agriculture sector and if they become key members in the larger Agriculture Community. We anticipate that this degree will greatly help in attaining jobs but also that this degree will provide rewards with the types of jobs these students are awarded. We hope to follow student's professional accomplishments for at least 10 years after they leave OSU and collect information from them, on what was best, what they did not use and what we missed.

Plant Pathology
Semester Course
List

Quarter Course Number	Semester Course Number	Course Title in Semester	Instructor(s)	Quarter Credit Hours	Semester Credit Hours	Number of Weeks	Semester Offered
	2000 - GEC	Molds, Mushrooms and Man	Tom Mitchell		3	14 weeks	Spring
201D	2001	Sick Plants and a Hungry World	Sarah Ellis	3	2	14 weeks	Autumn, Spring
401	3001	General Plant Pathology Lecture	Sarah Ellis	5	2	14 weeks	Autumn
	3002	General Plant Pathology Lab	Sarah Ellis		2	14 weeks	Autumn
395	3195	Plant Health Science Forum	Monica Lewandowski	1	1	14 weeks	May
597	3597	Societal Issues: Pesticides, Alternatives, and the Environment	Monica Lewandowski	5	3	14 weeks	Autumn, Spring
489	4191	Internship Experiences in Plant Health Management	Monica Lewandowski	1-5	1-6	14 weeks	Autumn, Spring, Summer
	4683	Research with Distinction	Faculty		1-6	14 weeks	Autumn, Spring, Summer
H683	4683 (H)	Research with Distinction	Faculty	1-10	1-6	14 weeks	Autumn, Spring, Summer
455	4550	Bioterrorism: An Overview	Michael Boehm	5	2	7 weeks	Spring
	4998	Undergraduate Research	Faculty		1-6	14 weeks	Autumn, Spring, Summer
600.01	5010	Phytobacteriology	Brian McSpadden-Gardener	3	2	7 weeks	Spring
600.02	5020	Introductory Plant Virology	Feng Qu	3	2	7 weeks	Spring
636	5030	Plant Nematology	Chris Taylor	3	2	7 weeks	Spring

660	5040	Science of Fungi: Mycology Lecture	Tom Mitchell	5	3	14 weeks	Autumn
	5041	Science of Fungi: Mycology Lab	Tom Mitchell		1	14 weeks	Autumn
610	5110	Ecology and Management of Pathogens and Insects Affecting Trees in Forest and Urban Environments	Enrico Bonello/Dan Herms	4	3	14 weeks	Spring
501	5120	Diseases of Ornamentals	Dennis Lewandowski	5	2	7 weeks	Spring
612/613	5130	Turf Diseases and Integrated Turf Health Management	Joe Rimelspach	3-4	3	14 weeks	Autumn
614	5140	Diseases of Field Crops	Anne Dorrance and Pierce Paul	3	2	14 weeks	Spring
615	5150	Fruit and Vegetable Diseases	Michael Ellis and Sally Miller	3	2	7 weeks	Spring
603	5603	Plant Disease Management	Michael Ellis and Larry Madden	5	3	14 weeks	Autumn
	5604	Capstone Course: Problem-Based Studies in Plant Health	Faculty from Plant Path and Entomology		2	14 weeks	Spring
685	5685	Plant Disease Diagnosis	Sally Miller	3	2	3 weeks May/Summer	Summer, May
401	6001	Advanced Plant Pathology	Sarah Ellis		3	14 weeks	Autumn
693	6193	Individual Studies	Faculty	1-5	1-6	14 weeks	Autumn, Spring, Summer
702	7002	Plant Disease Epidemiology	Larry Madden	4	3	14 weeks	Spring
703	7003	Agricultural Genomics: Principles and Applications	Guo-Liang Wang and Eric Stockinger	3	3	14 weeks	Spring
830	8300	Current Topics in Plant Pathology	Bonello, Mitchell, McSpadden-Gardener, Wang	1-2	1-2	14 weeks	Autumn, Spring, Summer
602/841/842/843	8400	Molecular Bases of Plant Host-Microbe Interactions	Graham/ Bonello/ McSpadden-Gardener/Redinbaugh/Taylor/ Mitchell/Wang	1-3	3	14 weeks	Spring

995	8899	Plant Pathology Seminar	Various Instructors	1	1	14 weeks	Autumn, Spring
901	8901	Mentored Teaching in Plant Pathology	Various Instructors	1-5	1-3	14 weeks	Autumn, Spring, Summer
902	8902	Mentored Extension/Outreach Teaching in Plant Pathology	Michael Ellis	1-3	1	14 weeks	Autumn, Spring, Summer
999	8999	Plant Pathology Research	Various Instructors	1-100	1-100	14 weeks	Autumn, Spring, Summer

*No longer offering: 294, 300, 602, 604, 613, 655, 694, 704, 832, 838, 839, 841, 842, 843. Either doing away with or incorporating course into other semester courses.

List of semester courses in Entomology: Proposed courses in OSU's new Dept. of Entomology in CFAES

New number (ENTMLGY)	Old number (ENTOMOL)	Credit hours (semester)	With lab?	Title	Pre-requisites	Target students		
						Entomology majors	Entomology minors	other
UNDERGRADUATE COURSES								
1101	101	4	yes	Insect biology	none	no	no	alternative for all majors that require Bio101
1111	(101)	4	yes	Biology of insects, animals & fungi affecting buildings	none	no	no	Const. mgmt.
1260	126	2	yes	Introductory insect field biology [StoneLab]	none	no	no	any
2101	102	3	no	Insects and human affairs: Pests, plagues, poisons & politics [distance]	none	optional (cultural GEC?)	optional (cultural GEC?)	optional (cultural GEC?)
2200	-	3	yes	Beekeeping	none	optional	optional	optional
3000	500	3	yes	General entomology	Bio113 or H115	required	required	optional
3330 & 4440H	333 & H444	3 & 3	no	Social insects	Bio 101 or 113 or H115 or Ent 1101	optional	optional	optional
4191	(489)	1-2	no	Internship experience in entomology	Ent 3000	required	optional	optional
4193	693	1-3		Individual studies	-	-	-	-
4194	294	1-3		Group studies	-	-	-	-
4200	520	2	yes	Insect biology for teachers [Stone Lab]	junior rank or above	optional	optional	teachers; education majors
4600	460, 462	1	no	Introductory insect science	Bio 101 (not open if credit for Ent 1101 or 3000)	no	no	required for HCS, PHM (& Ani.Sci.?)
4601	460	2	yes	General insect pest management	Ent 1101 or Ent 3000 or Ent 4600	one required (or 5110 or 5605); additional ones optional	one required (or 5110 or 5605); additional ones optional	one required for majors in HCS, PHM (& Ani.Sci.); additional ones optional
4602	462	2	yes	Landscape entomology				
4603	(460)	2	yes	Agricultural entomology				
4604	-	2	yes	Urban entomology: structural & nuisance pests				
4606	-	2	yes	Forensic entomology				
4607	-	2	yes	Veterinary entomology				
4683	699	1-3	no	Research with distinction	Permission of instructor	encouraged	optional	optional
4683H	699	1-3	no	Research with distinction	Permission of instructor	encouraged	optional	optional
COMBINED UNDERGRADUATE & GRADUATE COURSES								
5601	-	3	no	Current Topics in Entomology, Science and Society	Senior status	Required (or 5604)	optional	optional
5604	-	2	no	Capstone Course: Problem-Based Studies in Plant Health	Junior or senior status	Required (or 5601)	optional	optional
5605	-	2	yes	Human Health Entomology	Ent 1101 or Ent 3000 or Ent 4600			
5110 (cross-list Pl. Path.)	461+	3	no	Ecology and Management of Pathogens and Insects Affecting Trees in Forest and Urban Environments	Bio 101 or Ent 1101	optional	optional	required for forestry majors
5120	612	3-4	yes	Aquatic Insect Biology and Ecology [Stone Lab]	15 qtr-cr hrs of Bio.Sci., at least junior standing, GPA min. 2.5, or permission of instructor	optional	optional	optional
5130	-	3	yes	Field Insect Taxonomy	Ent 1101 or 3000 or 4600	Required, MS & PhD	optional	optional
5420	642	3	no	Insect Behavior	Bio 114 or Ent 3000	optional	optional	optional
5500	650	3	no	Biological Control of Arthropod Pests	Ent 1101 or 3000 or 4600	optional	optional	optional
5600	660	3	no	Principles and Applications of Integrated Pest Management	Ent 1101 or 3000 or 4600	optional	optional	optional
5623	623	2	yes	Insect Morphology	Ent 1101 or 3000 or 4600	optional	optional	optional
5800	-	3	no	Pesticide Science	Bio 101 or Ent 1101	optional	optional	optional

New number (ENTMLGY)	Old number (ENTOMOL)	Credit hours (semester)	With lab?	Title	Pre-requisites	Target students		
						Entomology majors	Entomology minors	other
GRADUATE COURSES								
6193	693	1-3	-	Individual studies	-	-	-	-
6194	694	1-3	-	Group studies	-	-	-	-
6310	631	3	no	Insect physiology and molecular biology	CHEM 231 or 251 or H251, and Ent 3000	required for PhD and MS	optional	optional
6410	641	3	no	Insect ecology & evolutionary processes	EEOB 503.01 or 503.03 or permission	required for PhD and MS	optional	optional
6701	(694)	2	yes	Biodiversity analysis for ecosystem sustainability & resilience	Ent 3000 and 5130 or permission	All 4 required for PhD; at least 2 of these 4 required for MS.	optional	optional
6702	-	2	yes	Entomological techniques and data analysis	Ent 1101 or 3000 or 4600		optional	optional
6703	(632)	2	yes	Molecular techniques and data analysis	Mol Gen 500 or H500 or permission		optional	optional
6704	(645)	2	yes	Systems analysis from molecules to ecosystems	Calculus (Math 151 or 161 or 140 or 117); statistics (Stat 135 or 528)		optional	optional
7890	795	1-2	no	Special topics in entomology		optional	optional	optional
7910	790	2	no	The nature and practice of science		At least 2 of these 4 required for MS and PhD	optional	optional
7920	-	2	no	Presentation skills for scientists			optional	optional
7930	-	2	no	Scientific writing and grant proposal development			optional	optional
7940	-	2	no	Interdisciplinary research, teamwork, and leadership			optional	optional
8000	800	1	no	Entomology seminar		optional	optional	optional
8800	880	1	no	Research and training seminar		Required in first year	optional	optional
8999	999	1-15		Research in entomology		required for MS plan A and PhD	optional	optional

Note: we are hopeful that in EEOB, courses such as medical ent. (661), insect systematics & diversity (621), comparative endocrinology (550), general acarology (670), cladistic methods (626), and Acarology will still be offered.

**Master in Plant Health Management
Semester Curriculum Advising Sheet**

Requirements and Curriculum

Master in Plant Health Management students are required to complete a minimum of 30 credit hours of graduate work with a minimum cumulative GPA of 3.0. At least 25 credit hours must be earned at OSU.

	Quarter Credit Hrs	Semester Credit Hrs
Core Courses	34	25
Targeted course in Plant Pathology or Entomology	3-4	2-3
Special Study or Internship	2-3	1-2
Directed Electives	6-10	0-2
Total credits	45-51	30

Course and Credit Hour Requirements

All students seeking a Master in Plant Health Management will take the following courses. Note this is an interdisciplinary program, so some core requirements are in the School of Natural Resources and Dept. of Horticulture and Crop Science.

Required Courses (25 credits):

	<u>Credits</u>
PLNTPH 5603 Plant Disease Management	3
PLNTPH 5685 Plant Disease Diagnosis	2
ENTMLGY 5600 Principles and Applications of Integrated Pest Management	3
ENTMLGY 5800 (NEW CLASS)/ Pesticide Science	3
ENR580 Soil Fertility and Fertilizers	3
H&CS 5422 Principle of Weed Ecology and Management	4
H&CS 5621 Crop Physiology	3
H&CS 8887 Techniques in Experimental Design	4

Choose one of the following from Plant Pathology/Entomology (2-3 credits):

PLNT PTH 5110/ENTMLGY5110 Ecology and Management of Pathogens and Insects Affecting trees in Forest and Urban Environments	3
PLNTPH 5120 Diseases of Ornamentals	2
PLNTPH 5130 Turfgrass Diseases and Integrated Turf Health Management	3
PLNTPH 5140 Diseases of Field Crops	2
PLNTPH 5150 Diseases of Fruit and Vegetables	2
ENTMLGY 5130 Field Insect Taxonomy	3
ENTMLGY 5500 Biological Control of Arthropod Pests	3
ENTMLGY 6701 Biodiversity Analysis for Ecosystem Sustainability and Resilience	2

Select one of the following field of study/special internship classes (1-2 credits):

ENTMLGY 6193 Individual Study	1-2
PLNTPH 6193 Individual Study	1-2
PLNTPH 8902 Mentored Extension/Outreach in Plant Pathology	1

Electives

Through careful consultation with their advisors, students must take elective courses that best reflect their personal interest. The following are courses supporting different "fields of interest". Other classes may also be considered to meet individual needs of student. These courses should be approved by the student's advisor.

AEDECON 5250	Commodity Futures and Options Markets	2
AEDECON 5330	Benefit Cost Analysis	3
AEDECON 6010	Applied Microeconomics I	4
AEDECON 6020	Applied Microeconomics II	4
AEE 7700	Documenting Change through Evaluation and Accountability	3
AEE 7230	Strategic and Program Planning for Visionary Change	3
AEE 8420	Leadership and Administration in Agriculture and Extension Education	3
AEE 8835	Methods of Teaching Agriculture	2
EEOB 674	Physiological Ecology of Plants	5
ENR 720	Characterization of Soil in Field and Laboratory Sampling	?
H&CS 5602	Ecology of Agriculture	3
H&CS 7625	Plant Breeding and Biotechnology	3
H&CS 7821	Advanced Crop Physiology	3
Advanced Statistics Course (agreed upon by SAC)		3

In addition, the following courses may also be taken as electives if they were not taken above:

ENTMLGY 5130	Field Insect Taxonomy	3
ENTMLGY 5420	Insect Behavior	3
ENTMLGY 5500	Biological Control of Arthropod Pests	3
ENTMLGY 6193	Individual Study: Focus on General Entomology	1
ENTMLGY 6410	Insect Ecology and Evolutionary Processes	3
ENTMLGY 6701	Biodiversity Analysis for Ecosystem Sustainability and Resilience	2
ENTMLGY 6702	Entomological Techniques and Data Analysis	2
ENTMLGY 6704	Systems Analysis from Molecules to Ecosystems	2
ENTMLGY 7910	The Nature and Practice of Science	2
PLNTPTH 5110/ENTMLGY5110	Ecology and Management of Pathogens and Insects	3
	Affecting Trees in Forest and Urban Environments	2
PLNTPTH 5120	Diseases of Ornamentals	2
PLNTPTH 5130	Turf grass Diseases and Integrated Turf Health Management	3
PLNTPTH 5140	Diseases of Field Crops	2
PLNTPTH 5150	Diseases of Fruit and Vegetables	2
PLNTPTH 5040	Science of Fungi: Mycology Lecture	3
PLNTPTH 5041	Science of Fungi: Mycology Lab	1
PLNTPTH 6001	Advanced Plant Pathology	3

Final Exam

As per the requirement of the graduate school, each student will complete a Final Master's Examination which will include both a written and oral examination. The examination will evaluate the student's proficiency and understanding of his/her field of study, with emphasis on the topic selected from students special projects/internships.

**Master in Plant Health Management
Quarter Advising Sheet**

Credit courses will be divided as follows:

Course	Quarter Credit Hrs	Semester Credit Hrs*
Core Courses	34	
Targeted course in Plant Pathology or Entomology	3-4	
Special Study or Internship	2-3	
Directed Elective	6-10	
Total credits	45-51	

* to be determined once credits are finalized

Core

The core curriculum will focus on specifics in plant health management with key emphasis on detection, diagnosis, and management of plant diseases and insect pests. In addition, students will also be required to learn basics in crop physiology, agronomy, soil fertility, and weed science— all key contributing factors in diagnosing and managing plant diseases and pests. It is expected that some of the students enrolling in this curriculum will have some of the core courses and readily add from these other lists.

Plant Pathology (PLNT PTH) and Entomology (ENTOMOL) required courses (18 credits):

PLNT PTH 685	Diagnostic Field Plant Pathology	3
PLNT PTH 603	Disease Management	5
ENTOMOL 500	General Entomology	5
ENTOMOL 660	Advanced Economic Entomology	5

This is an integrated Master's thus the following courses are also required for the core (16 credits):

ENR580	Soil Fertility and Fertilizers	3
Or HCS 636	Mineral Nutrition	
HCS 610	Weed Control in Horticulture Crops	3
HCS 621	Crop Physiology & Production	5
HCS 887	Techniques in Experimental Design	5

One of the following from Plant Pathology/Entomology:

PLNT PTH 501	Diseases of Ornamentals	3
PLNT PTH 610	Diseases of Forest and Shade Trees	4
PLNT PTH 612	Diseases of Turf	3
PLNT PTH 615	Diseases of Fruit and Vegetables	3
PLNT PTH 614 (NEW 2010)	Diseases of Field Crops	3

ENTOMOL 650	Biological Control of Arthropod Pests	4
ENTOMOL 694	Insect Biodiversity Analysis (Group Studies)	4

Field of study, special internship classes (select one, 2-3 credits):

ENTOMOL 693	Individual Study	2-3
PLNT PTH 693	Independent Study	2-3
PLNT PTH 902	Mentored Extension/Outreach in Plant Pathology	2-3

Directed Electives (6-10 credits):

Through careful consultation with their advisors, students must take two directed elective courses that best reflect their personal interest. The following are courses supporting different "fields of interest"

AEDECON 625	Commodity Futures and Options Markets	4
AEDECON 631	Benefit Cost Analysis	5
AEDECON 712	Finance and Risk Management	4
AEDECON 810	Agriculture Firm Management	3
AEE 723	Strategic Planning in Agriculture and Extension Education	3
AEE 735	Methods of Teaching Agriculture and Extension Methods	3
AEE 770	Evaluation	3
AEE 823	Program Planning in AEE	3
AEE 842	Leadership and Administration in AEE	3
EEOB 674	Physiological Ecology of Plants	5
ENR 720	Characterization of soil in field and laboratory sampling	3
ENTOMOL 650	Biological Control of Arthropod Pests (if not taken above)	4
ENTOMOL 694	Insect Biodiversity Analysis (if not taken above)	4
ENTOMOL 641	Insect Ecology	5
ENTOMOL 642	Insect Behavior	4
HCS 602	Field Crop Ecology	3
HCS 625	Crop Breeding	4
HCS 821	Advanced Crop Physiology	5
HCS 894	Physiology Plant Stress Response	5
PLNTPH 501	Diseases of Ornamentals (if not taken above)	3
PLNTPH 610	Diseases of Forest and Shade Trees (if not taken above)	3
PLNTPH 612	Turfgrass Disease (if not taken above)	4
PLNTPH 614	Diseases of Field Crops (if not taken above)	3
PLNTPH 615	Diseases of Fruits and Vegetables (if not taken above)	3
PLNT PTH 660	Mycology	5
STAT 529	Data Analysis (ANOVA)	3

Final Exam

As per the requirement of the graduate school, each student will complete a Final Master's Examination which will include both a written and oral examination. The examination will evaluate the student's proficiency and understanding of his/her field of study, with emphasis on the topic selected from students special projects/internships.

Master in Plant Health Management

Yearly plan for a full-time student

<u>Year 1</u>	<u>Autumn Semester</u>	<u>Credits</u>	<u>Spring Semester</u>	<u>Credits</u>
	ENTMLGY 5600	3	PLNTPTH 5603	3
	ENTMLGY 5800	3	H&CS 8887	4
	ENR 580	3	H&CS 5422	4
	H&CS 5621	3	<u>PLNTPTH or ENTMLGY Course</u>	<u>2-3</u>
	<u>Directed Elective</u>	<u>3</u>		
Total		15		13-14

<u>Year 1</u>	<u>Summer Semester</u>	<u>Credits</u>
	PLNTPTH 5685	2
	<u>PLNTPTH/ENTMLGY 6193 1-2</u>	
Total		3-4

MINIMUM TOTAL FOR DEGREE: 30 credit hours

Master in Plant Health Management

Transition Plan

Full time – Quarter to Semester

Spring Quarter - 2012	Credit Hours
PLNTPTH 603 Plant Disease Management	5
H&CS 887 Techniques in Experimental Design	5
PLNTPTH 614 Diseases of Field Crops	3
H&CS 694 Group Studies in Weed Science	3
Total	16

Summer Semester 2012	Credit Hours
PLNTPTH 5685 Plant Disease Diagnosis	2
PLNTPTH/ENTMLGY 6193 Individual Study	1
Total	3

Autumn Semester 2012	Credit Hours
ENTMLGY 5600 Principles and Applications of IPM	3
ENTMLGY 5800 Pesticide Science	3
ENR 580 Soil Fertility and Fertilizers	3
H&CS 5621 Crop Physiology	3
Directed Elective	0-3
Total	12-15

Program Learning Goals
Masters in Plant Health Management

The MPHM is an applied graduate degree for practicing professionals and others who want to enhance their professional competency in pathogen and pest management of agricultural and urban landscapes.

Upon successful completion of the Master's in Plant Health Management, students should:

1. Understand the adverse effects of pathogens, pests and other factors influencing plant health beyond that acquired in a bachelor's degree program;
2. Achieve a professional competency in assessing and applying plant health management strategies in agricultural systems and managed and natural landscapes/ecosystems;
3. Achieve an ethical framework for inquiry and action in science and society that includes entrepreneurship and business; collaboration, political and community engagement; and environmental stewardship;
4. Develop critical thinking and problem solving skills through educational and training experiences in plant health management; and
5. Demonstrate decision making and communication skills appropriate for a professional environment.

Master in Plant Health Management
Learning Outcome-Course Matrix

The MPHM is an applied graduate degree for practicing professionals and others who want to enhance their professional competency in pathogen and pest management of agricultural and urban landscapes.

		Achievement of learning goals at different levels.		
		Beginning	Intermediate	Advanced
Foundational Knowledge, Skills and Professionalism	Students will...			
	LO#1: Understand the adverse effects of pathogens, pests and other factors influencing plant health beyond that acquired in a bachelor's degree program;	<p>PLNTPTH: N/A</p> <p>ENTOMOL: 5600 (Principles and Applications of IPM); 6702 (Entomological Techniques)</p>	<p>PLNTPTH: 5110 (Forest Health Protect.); 5130 (Turf Dis.); 5140 (Dis. of Field Crops); 5150 (Fruit and Veg Dis.); 5120 (Dis. of Ornamentals)</p> <p>ENTOMOL: 5110 (Forest Health Protect.); 5130 (Field Insect Taxonomy); 6410 (Insect Ecology and Evolutionary Processes)</p> <p>ENR 580 (Soil Fert.), ENR 720 (Char. of Soil); HCS 5422 (Weeds); HCS 5621 (Crop Physiology and Production); HCS 5602 (Ecology of Agriculture)</p>	<p>PLNTPTH: 5603 (Disease Mgt); 5685 Plant Disease Diagnosis; 6001 (Adv. Plant Path); 5040 (Mycology Lecture)</p> <p>ENTOMOL: 6704 (Systems Analysis)</p> <p>HCS: 8887 (Techniques in Experimental Design); HCS 7821(Advanced Crop Physiology)</p>
	LO#2: Achieve a professional competency in assessing and applying plant health management strategies in agricultural systems and managed and natural	<p>PLNTPTH: 5120 (Dis. Of Ornamentals), 5140 (Dis. of Field Crops)</p>	<p>PLNTPTH:5110 (Forest Health Protect.);5120 (Dis. Of Ornamentals); 5130 (Turf Dis.); 5150 (Fruit and Veg Dis.); 5140 (Diseases of Field Crops; 5685 (Dis. Diagnosis)</p>	<p>PLNTPTH: 5603 (Disease Mgt.); 6193(Independent Study); 8902 (Mentored Extension/Outreach)</p>

landscapes/ecosystems;	ENTOMOL: 5600(Principles and Applications of IPM)	ENTOMOL: 5500 (Biological Control of Insects); 5800 (Pesticide Science); 5130 (Field Insect Taxonomy)	ENTOMOL: 6193 (Individual Study); 6704 (Systems Analysis)
		EEOB 674 (Eco of Plants); HCS 5621 (Crop Phys); HCS 7821 (Adv. Crop Phy); HCS 7625 (Plant Breed);	
LO#3: Achieve an ethical framework for inquiry and action in science and society that includes entrepreneurship and business; collaboration, political and community engagement; and environmental stewardship;	PLNTPTH: N/A	PLNTPTH: 5110 (Forest Health Protect.); 5120 (Dis. of Ornamentals); 5140 (Dis. Of Field Crops); 5685 (Dis. Diagnosis)	PLNTPTH: 6193 (Independent Study); 8902 (Mentored Extension/Outreach)
	ENTOMOL: 5500 (Biological Control of Insects); 5800 (Pesticide Science);	ENTOMOL: 5600 (Principles and Applications of IPM); 6701 (Techniques for Insect Biodiversity)	ENTOMOL: 6193 (Individual Study); 7910 (Nature and Practice of Science)
LO#4: Develop critical thinking and problem solving skills through educational and training experiences in plant health management; and		All AEDECON and AEE courses	
		PLNTPTH: 5110 (Forest Health Protect.); 5120: Diseases of Ornamentals; 5130 (Turf Dis.); 5140 (Dis. of Field Crops); 5150 (Fruit and Veg Dis.)	PLNTPTH:5685 (Dis. Diagnostics); 5603 (Plant Disease Mgt.); 6193 (Independent Study); 8902 (Mentored Extension/Outreach)
	PLNTPTH: 5040 (Mycology Lecture)	ENTOMOL: 5600 (Principles and Applications of IPM); 6702 (Entomological Techniques)	ENTOMOL: 6193 (Individual Study)
	ENTOMOL: N/A	HCS 5621 (Crop Phys); HCS 7821 (Adv. Crop Phy); HCS	HCS 8887 (Tech Exp Design)

	<p>LO#5: Demonstrate decision making and communication skills appropriate for a professional environment.</p>	<p>7625 (Plant Breed); EEOB 674 (Eco of Plants); PLNTPTH: 5110 (Forest Health Protect.); 5120 (Dis. of Ornamentals); 5685 (Dis. Diagnosis); 5603 (Disease Mgt.); 6193 (Independent Study) PLNTPTH: N/A ENTOMOL: 5600 (Principles and Applications of IPM); 6193 (Individual Study) ENTOMOL: N/A AEE courses</p>	<p>7625 (Plant Breed); EEOB 674 (Eco of Plants); PLNTPTH: 5110 (Forest Health Protect.); 5120 (Dis. of Ornamentals); 5685 (Dis. Diagnosis); 5603 (Disease Mgt.); 6193 (Independent Study) ENTOMOL: 5600 (Principles and Applications of IPM); 6193 (Individual Study)</p>	<p>PLNTPTH: Final Exam ENTOMOL: Final Exam</p>
--	---------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------