UNIVERSITY OF KENTUCKY

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COLLEGE OF AGRICULTURE

March 24, 2008

MEMO

To: Dr. Jeannine Blackwell
Dean, Graduate School

From: Dr. Mike Mullen
Associate Dean

Re: New Course Proposal from Plant Pathology

Attached is a proposal for a new course, PPA 650 – Fungal Biology. This was approved by the Graduate Committee on December 12. Approval by College faculty occurred on March 17, 2008.

The College of Agriculture looks forward to the approval of this course change.

Office of Academic Programs
N6 Agricultural Science Building North • Lexington, Kentucky 40546-0091
(859) 257-3468
www.ca.uky.edu/students

APPLICATION FOR NEW COURSE

1. Submitted by the College of Agriculture Date: 11/12/07

Department/Division proposing course: Plant Pathology

2. Proposed designation and Bulletin description of this course:

a. Prefix and Number PPA 650

b. Title* Fungal Biology

*If title is longer than 24 characters, write a sensible title (24 characters or less) for use on transcripts:

c. Courses must be described by at least one of the categories below. Include the number of actual contact hours per week for each category, as applicable.

(___) CLINICAL (___) COLLOQUIUM (___) DISCUSSION (___) LABORATORY (2) LECTURE

(___) INDEPEND. STUDY (___) PRACTICUM (___) RECITATION (___) RESEARCH (___) RESIDENCY

(___) SEMINAR (___) STUDIO (___) OTHER – Please explain:

d. Please choose a grading system: ☒ Letter (A, B, C, etc.) ☐ Pass/Fail

e. Number of credit hours: 2

f. Is this course repeatable? YES ☐ NO ☒ If YES, maximum number of credit hours:

g. Course description:

This course will introduce basic concepts of fungal biology, including systematics, anatomy, cell biology, metabolism, developmental biology, ecology, population genetics, and reproduction. Students will also learn about the use of fungi in research and biotechnology.

h. Prerequisite(s), if any:

PPA 400G, PPA 500, PPA 600, PPA 641, undergraduate courses in biology, genetics, and chemistry, or permission of instructor

i. Will this course be offered through Distance Learning? YES ☐ NO ☒

If YES, please circle one of the methods below that reflects how the majority of the course content will be delivered:

Internet/Web-based | Interactive video | Extended campus | Kentucky Educational Television (KET/teleweb) | Other

Please describe "Other":

3. Teaching method: ☒ N/A or ☐ Community-Based Experience ☐ Service Learning Component ☐ Both

4. To be cross-listed as:

Prefix and Number

Signature of chair of cross-listing department

APPLICATION FOR NEW COURSE

5. Requested effective date (term/year): Spring / 2009

6. Course to be offered (please check all that apply): ☐ Fall ☒ Spring ☐ Summer

7. Will the course be offered every year? ☒ YES ☐ NO

If NO, please explain: Or as needed

8. Why is this course needed?
Fungi are the most important group of plant pathogens, and graduate level training in plant pathology is not complete without a thorough understanding of this unique group of organisms. A focus on fungal biology, rather than taxonomy or systematics, which would be more typical in a traditional mycology class, is most useful for the plant pathology researcher. The course will be designed to either stand alone, or to partner with the existing Advanced Plant Mycology course (PPA 672) that is focused on the molecular genetics of development and signaling in plant-fungal associations, and for which this course will be a prerequisite or concurrent requirement. The combination of the two will be especially valuable for students who plan to specialize in research involving plant-fungal associations.

9. **a.** By whom will the course be taught? Lisa Vaillancourt

b. Are facilities for teaching the course now available? ☒ YES ☐ NO

If NO, what plans have been made for providing them?

10. What yearly enrollment may be reasonably anticipated?
6-12

11. **a.** Will this course serve students primarily within the department? ☒ Yes ☐ No

b. Will it be of interest to a significant number of students outside the department? ☒ YES ☐ NO

If YES, please explain.
There are currently no courses in general mycology or fungal biology offered anywhere on campus. This course will provide a good basic understanding of fungi and the fungal lifestyle for students in Biology, Forestry, Plant and Soil Sciences, and other life science disciplines.

12. Will the course serve as a University Studies Program course†? ☐ YES ☒ NO

If YES, under what Area?

†AS OF SPRING 2007, THERE IS A MORATORIUM ON APPROVAL OF NEW COURSES FOR USP.

13. Check the category most applicable to this course:

☒ traditional – offered in corresponding departments at universities elsewhere

☐ relatively new – now being widely established

☐ not yet to be found in many (or any) other universities

14. Is this course applicable to the requirements for at least one degree or certificate at UK? ☒ Yes ☐ No

15. Is this course part of a proposed new program? ☐ YES ☒ NO

APPLICATION FOR NEW COURSE

If YES, please name: _____

16. Will adding this course change the degree requirements for ANY program on campus? ☐ YES ☒ NO
If YES‡, list below the programs that will require this course:

‡In order to change the program(s), a program change form(s) must also be submitted.

17. ☒ The major teaching objectives of the proposed course, syllabus and/or reference list to be used are attached.

18. ☐ Check box if course is 400G or 500. If the course is 400G- or 500-level, *you must include a syllabus showing differentiation* for undergraduate and graduate students by (i) requiring additional assignments by the graduate students; and/or (ii) the establishment of different grading criteria in the course for graduate students. (See *SR 3.1.4)*

19. Within the department, who should be contacted for further information about the proposed new course?

Name: Lisa Vaillancourt Phone: 257-7445x80731 Email: vaillan@uky.edu

20. Signatures to report approvals:

December 12, 2007		/	
DATE of Approval by Graduate Committee	printed name	Reported by Department Chair	signature
March 17 2008	Michael Mullen	/	
DATE of Approval by College Faculty	printed name	Reported by College Dean	signature
		/	
* DATE of Approval by Undergraduate Council	printed name	Reported by Undergraduate Council Chair	signature
Approved by Graduate Council 10/2/08		/	
* DATE of Approval by Graduate Council	printed name	Reported by Graduate Council Chair	signature
		/	
* DATE of Approval by Health Care Colleges Council (HCCC)	printed name	Reported by Health Care Colleges Council Chair	signature
* DATE of Approval by Senate Council		Reported by Office of the Senate Council	
* DATE of Approval by University Senate		Reported by Office of the Senate Council	

*If applicable, as provided by the *University Senate Rules. (http://www.uky.edu/USC/New/RulesandRegulationsMain.htm)*

PPA 650: FUNGAL BIOLOGY: SYLLABUS
Spring Semester

Credit hours: 2 (two lectures per week).
Instructor: Lisa J. Vaillancourt (vaillan@uky.edu, 257-7445x80731). Because the class is anticipated to be small, I do not plan to assign office hours, but I will always be available for individual consultation by appointment, and I will try to respond to e-mail queries within 24 hours. I have voicemail and students will be welcome to leave a message there, if they prefer.
Text: "The Fungi, 2nd Edition", by Michael Carlile, Sarah Watkinson, and Graham Gooday, Elsevier Press.

Course Description
This course will introduce basic concepts of fungal biology, including systematics, anatomy, cell biology, metabolism, developmental biology, ecology, population genetics, and reproduction. Students will also learn about the use of fungi in research and biotechnology.

Student Learning Outcomes:
After completing this course students will be able to:

- Define common mycological terms.
- Describe the evolutionary relationships and overall organization of the fungal kingdom.
- Compare and contrast Eumycota with other organisms that are commonly included among the fungi.
- Diagram fungal cellular ultrastructure, name and explain the function of major organelles.
- Describe the structure, chemistry, and developmental biology of the fungal cell wall.
- Explain how fungi grow, and predict environmental effects on growth.
- Describe the modes of action of major classes of antifungal chemicals.
- Draw lifecycles and describe modes of reproduction for the major groups of fungi.
- Diagram basic primary and secondary metabolic pathways in fungi.
- Compare and contrast the various saprophytic and parasitic lifestyles of fungi.
- Describe the unique advantages of fungi for use in research and biotechnology.

Prerequisites: General undergraduate courses in biology, genetics, and chemistry. PPA400G, PPA500, PPA600, and PPA640 should be completed before taking this course. If any of these prerequisites have not been completed, the permission of the instructor will be necessary before enrolling.

• **Assignments, Exams, and Grades:** Students will be assigned reading in the textbook each week. Study questions will be provided, including some that are fairly narrow and specific and others that are more open ended 'discussion' questions, at the end of each week to help students prepare for the following week's lectures. Vocabulary homework will also be assigned to complete and turn in each week. Students will be asked to address the study questions or to define vocabulary terms from the homework during lectures. All

students are expected to contribute to the general class discussion. Students are encouraged to work together outside of class on the vocabulary and study questions, but each student will ultimately be held responsible for all of these materials on the tests and quizzes.

Several additional short homework assignments will be given. All homework will be due at the beginning of the class period. Late homework will NOT be accepted, and will not receive credit.

There will be four short quizzes on the reading material, assigned homework, and vocabulary.

Lectures will incorporate demonstration material and hands-on exercises as much as possible, within the limited time available.

The midterm and final examinations will each consist of essay questions testing basic understanding of key concepts and ability to relate material to applications in research and biotechnology. These questions will be drawn from the lectures and reading, and will be based on the open-ended discussion questions from each reading assignment.

Assignments, Exams and Grades:
Class participation: 10%
Vocabulary and other homework: 20%
Quizzes: 20%
Midterm exam: 25%
Final exam: 25%

Grading scale: A=90%+; B=80-89%; C=70-79%; E=<69%

Attendance: This is a graduate level class. Students are expected to attend all lectures and to be on time for all lectures. There will be no make-up quizzes or exams without a documented excuse (doctors note, e.g.). If you miss a lecture, you will be responsible for obtaining notes and handouts from a classmate, and you will still be held responsible for turning in any homework that is due on that day on time (e.g. give it to a classmate to hand in for you).

TOPIC	**Assignments DUE**	**ASSIGNED READING IN "THE FUNGI"**
Introduction		None
Introduction Movie		Chapter 1
Fungal Diversity Slime molds	Worksheet 1 Vocabulary 1	Chapter 2, pages 10-25
Fungal Diversity Oomycota		Chapter 2, pages 25-32
Fungal Diversity Chytrids, Zygomycota Quiz 1	Vocabulary 2	Chapter 2, pages 32-44
Fungal Diversity		Chapter 2, pages 44-57,

Ascomycota, mitosporic fungi, lichens		pages 69-79
Fungal Diversity Basidiomycota	Birthday Fungus (Worksheet 2) Vocabulary 3	Chapter 2, pages 57-69
Fungal Anatomy Ultrastructure		Chapter 3, pages 85-98
Fungal Anatomy Cell wall	Worksheet 3 Vocabulary 4	Chapter 3, pages 99-106
Fungal Growth Quiz 2		Chapter 3, pages 107-122
Fungal Growth		Chapter 3, pages 123-144
Fungal Growth	Vocabulary 5	Chapter 3, pages 169-181
Fungal Metabolism Primary metabolism		Chapter 3, pages 145-169
Fungal Metabolism Fermentation		Chapter 8, pages 460-492
Fungal Metabolism Secondary metabolism	Vocabulary 6	Chapter 8, pages 507-525
MIDTERM EXAM		
Spores, Dormancy, Dispersal		Chapter 4, pages 185-212
Spores, Dormancy, Dispersal Quiz 3	Worksheet 4 Vocabulary 7	Chapter 4, pages 212-243
Fungal Genetics		Chapter 5, pages 244-280
Fungal Genetics	Vocabulary 8	Chapter 5, pages 280-295
Fungal Genetics		Chapter 8, pages 525-539
Fungal Ecology: Saprophytes	Worksheet 5 Vocabulary 9	Chapter 6, pages 295-330
Fungal Ecology Saprophytes: Movie		Chapter 6, pages 330-356
Fungal Ecology: Saprophytes: Scavenger Hunt	Vocabulary 10	None (be sure to finish Chapter 6 by this date!)
Fungal Ecology: Plant Pathogens Quiz 4	Scavenger Hunt (Worksheet 6)	Chapter 7, pages 363-385, pages 419-426
Fungal Ecology: Plant Pathogens	Vocabulary 11	Chapter 7, pages 385-394, pages 408-419
Fungal Ecology: Symbionts: Mycorrhizae		Chapter 7, pages 394-408
Fungal Ecology: Fungi and animals	Vocabulary 12	Chapter 7, pages 426-459
FINAL EXAM		

CoA Graduate Curriculum Committee

This List: PPA 650

CoA Graduate Curriculum Committee > PPA 650

PPA 650

New Fungal Biology Course

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View Response	Created By	Modified	Completed
View Response #1	Harmon, David L	11/30/2007 2:28 PM	Yes
View Response #2	Dougherty, C. T	12/3/2007 9:48 AM	Yes
View Response #3	Coyne, Mark S	12/4/2007 10:37 AM	Yes
View Response #4	Wagner, David	12/11/2007 11:25 AM	Yes
View Response #5	Hunt, Arthur G	12/11/2007 12:28 PM	Yes
View Response #6	Gaetke, Lisa M	12/12/2007 11:27 AM	Yes
View Response #7	Weckman, Randy D	12/12/2007 2:40 PM	Yes

College Curriculum Approval This List: PPA 650 - Fungal Bio

College Curriculum Approval > PPA 650 - Fungal Biology

PPA 650 - Fungal Biology

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View Response	Created By	Modified	Completed
View Response #1	Robbins, Lynn W	3/9/2008 10:11 AM	Yes
View Response #2	Wagner, David	3/9/2008 10:23 AM	Yes
View Response #3	Fox, Charles W	3/10/2008 10:51 AM	Yes
View Response #4	Yeargan, Ken	3/10/2008 11:32 AM	Yes
View Response #5	Vaillancourt, Lisa J	3/10/2008 6:01 PM	Yes
View Response #6	McCulley, Rebecca L	3/11/2008 1:47 PM	Yes
View Response #7	Williams, Mark A	3/12/2008 1:56 PM	Yes
View Response #8	Dougherty, C. T	3/18/2008 2:21 PM	Yes