APPLICATION FOR NEW COURSE

1. Submitted by College of  Agriculture  
   Department/Division offering course  Plant Pathology Department  
   Date  November 4, 2004  

2. Proposed designation and Bulletin description of this course  
   a. Prefix and Number  PPA 673  
   b. Title*  Advanced Plant Disease Resistance  
      *NOTE: If the title is longer than 24 characters (including spaces), write  
      A sensible title (not exceeding 24 characters) for use on transcripts  
   c. Lecture/Discussion hours per week  1  
   d. Laboratory hours per week  0  
   e. Studio hours per week  0  
   f. Credits  1  
   g. Course description  
      Bacterial mechanisms underlying pathogenesis and virulence in interactions causing plant disease, and 
      symbiotic compatibility in mutualisms.  
   h. Prerequisites (if any)  
      PPA 400G, PPA 500, PPA 600  

3. May be repeated to a maximum of  N/A  
   (if applicable)  

4. To be cross-listed as  N/A  
   Prefix and Number  
   Signature, Chairman, cross-listing department  

5. Effective Date  Fall 2006  
   (semester and year)  

6. Course to be offered  
   ☑ Fall  ☐ Spring  ☐ Summer  

7. Will the course be offered each year?  
   (Explain if not annually)  
   ☑ Yes  ☐ No  
   N/A  

8. Why is this course needed?  
   Plant diseases have a devastating impact on agricultural production every year, knowledge of the mechanisms 
   leading to resistance is needed to combat such diseases  

9. By whom will the course be taught?  Pradeep Kachroo  
   Are facilities for teaching the course now available?  
   If not, what plans have been made for providing them?  
   ☑ Yes  ☐ No  
   N/A
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10. What enrollment may be reasonably anticipated? 5

11. Will this course serve students in the Department primarily?  
Will it be of service to a significant number of students outside the Department?  
If so, explain.  

N/A

12. Check the category most applicable to this course:  
☐ traditional; offered in corresponding departments elsewhere;  
☐ relatively new, now being widely established  
☐ not yet to be found in many (or any) other universities

13. Is this course applicable to the requirements for at least one degree or certificate at the University of Kentucky?  

14. Is this course part of a proposed new program?  
If yes, which?  

15. Will adding this course change the degree requirements in one or more programs?*  
If yes, explain the change(s) below  

N/A

16. Attach a list of the major teaching objectives of the proposed course and outline and/or reference list to be used.

17. If the course is a 100-200 level course, please submit evidence (e.g., correspondence) that the Community College System has been consulted.  

18. If the course is 400G or 500 level, include syllabi or course statement showing differentiation for undergraduate and graduate students in assignments, grading criteria, and grading scales.  

19. Within the Department, who should be contacted for further information about the proposed course?  
Name Pradeep Kachroo  
Phone Extension 257-7445x80729

*NOTE: Approval of this course will constitute approval of the program change unless other program modifications are proposed.
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Signatures of Approval:

David A. Smith
Department Chair

Dean of the College

Date

4/22/05

Date

4/22/05

Date of Notice to the Faculty

4/7/05

Date

Undergraduate Council

Date

University Studies

Date

Graduate Council

Date

Academic Council for the Medical Center

Date

Senate Council (Chair)

Date

*If applicable, as provided by the Rules of the University Senate

Date of Notice to University Senate

ACTION OTHER THAN APPROVAL

Rev 3/04
PPA 673: Advanced Plant Disease Resistance
Semesters taught: Every fall.
Credit hours: 1
Prerequisites: PPA 400G, PPA 500, PPA 600
Requirement: Option to fulfill the requirement for two courses in Advanced Plant Pathology
Organizer and Instructor: Pradeep Kachroo
Major Teaching Objectives: Give student an in-depth understanding of the interaction between host and pathogen. Emphasis is on the host defense signaling.
Readings: At least 1 week before each lecture, students will be assigned one review paper and one recent research paper for that lecture.
Lecture formats: Each lecture will begin with a brief overview of the topic, and will conclude with a 15-20 minute critical discussion of the research paper. Students will be assigned to lead the discussions of research papers.

Topics:
Lecture 1  Genetic analysis of plant disease interactions
            Gene for Gene interaction
Lecture 2  Mapping, map based cloning of genes,
Lecture 3  R gene structure and function
Lecture 4  Hypersensitive response, Lesion mimics
Lecture 5  Downstream signaling, signal transduction
Lecture 6  Signaling and disease resistance
Lecture 6  SA and disease resistance
Lecture 7  JA/ethylene and disease resistance
Lecture 8  Midterm exam
Lecture 9  FA signaling and disease resistance
Lecture 10 NO and disease resistance
Lecture 11 Cross talk and comparison of R signaling pathways against virus, bacterial, oomycete and fungal pathogens
Lecture 12 Virus-induced gene silencing
Lecture 13 Virus-induced gene silencing
Lecture 14 Resistance via tolerance

Assignments, Exams and Grades:
Participation: 40 pts
Midterm exam: 30 pts
Final exam: 30 pts
Grades: 90-100%, A; 80-89%, B; 70-79%, C; <70%, D