APPLICATION FOR NEW COURSE

1. Submitted by College of Agriculture ____________________________ Date 22 September 2005

Department/Division offering course Entomology ____________________________

2. Proposed designation and Bulletin description of this course

a. Prefix and Number ENT 667 ____________________________ b. Title Invasive Species Biology ____________________________

*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 3 ____________________________ d. Laboratory hours per week ____________________________

e. Studio hours per week ____________________________ f. Credits ____________________________

g. Course description. This course will examine circumstances that allow introduced species to become invasive, how invasive species threaten our resources, and approaches to minimizing the incidence and impact of invasions.

h. Prerequisites (if any) Graduate standing or consent of instructor ____________________________

i. May be repeated to a maximum of none ____________________________ (if applicable)

4. To be cross-listed as

FOR 667, BIO 667 ____________________________________________
Prefix and Number

Signature, Chairman, cross-listing department ____________________________

5. Effective Date Fall 2007 ____________________________ (semester and year)

6. Course to be offered Fall X Spring Summer ____________________________

7. Will the course be offered each year? Yes X No ____________________________

(Explain if not annually) Fall semester odd years ____________________________

8. Why is this course needed? This course addresses an area of emerging concern. It is not currently taught at UK, nor is it widely taught at any of our benchmark institutions.

9. a. By whom will the course be taught? Lynne K. Rieske-Kinney ____________________________

b. Are facilities for teaching the course now available? Yes X No If not, what plans have been made for providing them?
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Signatures of Approval:

John J. Abouleil
Department Chair

Dean of the College

DVD 7, 2005
Date

2/24/2006
Date

2/6/2006
Date of Notice to the Faculty

*Undergraduate Council

*University Studies

*Graduate Council

*Academic Council for the Medical Center

*Senate Council (Chair)

Date of Notice to University Senate

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

ACTION OTHER THAN APPROVAL

Rev 3/04
Course proposal: Invasive Species, ENT/FOR/BIO 667
Fall semesters (alternating years)

Purpose: Recent relaxations in trade restrictions, the search for alternative agricultural enterprises, and globalization of the economy have led to alarming increases in the importation of exotic organisms. Many of these exotic organisms are potentially invasive arthropod, pathogen, and plant species that can alter ecosystems and directly impede our ability to meet food and fiber needs. This course will examine the circumstances that allow an introduced organism to become invasive, examine specific introductions (past and present) threatening our resources, and investigate current and future steps to reduce the incidence and impact of invasive species. Our purpose is to develop insight into the biology and ecology of biological invasions, so as to gain an understanding of available means of minimizing their impact.

Nature: This will be a 3 credit graduate level course consisting of two 1½ hr lectures/presentations/discussions weekly.

Contact Information:
Dr. Lynne K. Rieske-Kinney 859.257.1167
Department of Entomology  rieske@uky.edu
217 Animal Pathology Bldg.

Proposed Structure: The first part of the course will use a traditional lecture format to provide foundation principles and concepts. Early lectures will cover historical faunal realms prior to human intervention, the economic and political forces that set the stage for species invasions, the biology and ecology of invasive species and invasiveness, and the susceptibility to and risks of invasions, followed by the consequences of invasion. Mid-semester lectures will cover intentional and accidental invasions of various taxa, including arthropods, vertebrates, plants, pathogens, etc. The extent and impact of these introductions, and the ecological and economic costs associated with managing them, will be addressed. With the completion of this background information, students will then use a holistic approach to investigate and present case studies covering invasive species impacting various systems. Examination of specific cases will begin with aquatic and forest systems, both of which are at the forefront of invasive species introductions. From there the case studies will move to agroecosystems, which will provide the opportunity to examine the threat of invasive species to manipulated systems, which themselves may consist of introduced species. Lastly the case study topics will move into the areas of invasive threats to animal and human health, finally addressing threats to biological diversity and ecosystem conservation. Working in small groups, students will act as presenter/discussion leaders. Students will be expected to approach their system holistically, examining its historic and current structure, its current status, and its current and future susceptibility to and risk of invasion by various taxa. Students should utilize the concepts that have been discussed in class, including an overview of the biology and ecology of the system, and how developing technologies can be used to manage the system. Presenters will develop an in-depth presentation and will be expected to have solid enough background knowledge to lead the group through the topic. Leaders will also provide an appropriate reading assignment for the class one week in advance. This portion of the course will emphasize discussion and participation. A short writing assignment from each student, synthesizing the presentation material with relevant discussion points, will be required one week following their presentation. This course would be designed to satisfy Department of Entomology graduate student requirements for course work in Core Areas 1 (Insect Behavior, Ecology, Evolution and Systematics) or 3 (Pest Management and Applied Ecology).
Proposed Grading: There will be two exams, a mid term and a final, as well as a short paper covering the students' research into their assigned system.

- 15% Midterm
- 30% Group presentation/discussion of case study
- 10% Writing assignment
- 15% Participation in class discussions
- 30% Final exam

Grades will be assigned on the following scale:

- A = 90 - 100%
- B = 80 - 89%
- C = 70 - 79%
- E = < 70%

Policies: Please be considerate enough to attend class regularly and punctually. Participation is a major portion of your grade.

Academic policies as outlined in the “student Rights and Responsibilities” book (Part II, effective Nov. 1991) apply to this course. According to UK policy, the minimum consequence for cheating and/or plagiarism is a grade of “E” in the course. Do not cheat. Do not plagiarize.
Proposed course: Invasive species, ENT/FOR/BIO 667; Preliminary Course Schedule

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<tr>
<th>Wk</th>
<th>Lecture</th>
<th>Approximate topic</th>
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<tr>
<td>1</td>
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<td>Changing face of floral and faunal realms</td>
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<td>Economic and politic forces</td>
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<td>Biology of Invasive species</td>
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<td>4</td>
<td>Ecology of invasions Part I: Invasiveness</td>
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<td>Ecology of invasions Part II: Susceptibility</td>
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<td>Ecology of invasions Part III: Risk (hybridization, gmo's)</td>
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<td>Ecology of invasions Part IV: Consequences</td>
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<td>Aquatic organisms</td>
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<td>Terrestrial vertebrates</td>
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<td>Invasive species management – molecular and organismal approaches</td>
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<td>Invasive species management – community and ecosystem approaches</td>
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<td>17</td>
<td>Student-led Case Study: Aquatic systems Part I (the Great Lakes)</td>
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<td>Aquatic systems Part II</td>
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<td>Student-led Case Study: Forest systems Part I (mixed hardwood forest)</td>
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<td>Forest systems Part II</td>
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<td>Student-led Case Study: Agroecosystems Part I (soybeans)</td>
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<td>Agroecosystems Part II</td>
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<td>Student-led Case Study: Human health Part I (semi-transient population in Lexington KY)</td>
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<td>Human health Part II:</td>
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<td>Student-led Case Study: Animal health Part I (beef cattle)</td>
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<td>Animal health Part II</td>
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<td>Student-led Case Study: Conservation and biodiversity Part I</td>
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<td>Discussion: Bioterrorism risk</td>
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<td>Management revisited . . . Mitigation strategies</td>
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