UNIVERSITY OF HAWAII AT MĀNOA
UHM-1 FORM (ADD A COURSE OF STUDY)

1. Course Subject: PEPS
2. Proposed Course Number: 310
3. Effective Term (Start/End): Fall 2004
4. Frequency:
   - Fall & Spring semester
   - Once a year
   - Fall semester only
   - Spring semester only
   - Other
5. Course Title: Environment & Agriculture: Conserving and Cultivating
6. Course Title: ENVIRON & AGRICULTUR
7. S. I. DEGREE Course Title (20 characters or less): Environment & Agriculture
8. Offering (check one):
   - Regular
   - Experimental
   - Not available this year
9. Course (check one):
   - 1. Request approval of the _______ by ________ and ________
   - 2. Request approval of the _______ by ________
   - 3. Do not consider for a General Education Core or Graduation Requirement.
10. Grade Option (check all that apply):
    - Letter Grade (C)
    - Credit/No Credit (C)
    - Auditing (A)
    - Pass/No Credit (P)
11. Number of Credits: 3
12. Repeat Limit: 3
13. Major Restrictions:
14. Prerequisite Course(s) (Enter course title and number for each prerequisite. Use "or" or "and" instead of punctuation. Type "or considered" after each prerequisite course that may be taken concurrently. Ask instructor to indicate what type of waiver is acceptable [pass only, etc.]).
   - PEPS 210
15. Prerequisite Note (Check one):
   - Instructor Approval
   - Departmental Approval
   - Other Approval
   - No Waiver
16. Contact Hours and Instruction Type

   - Lecture (LEC)
   - Online Instruction (ONL)
   - Clinical (CLN)
   - Seminar (SEM)

   - Laboratory (LAB)
   - Thesis/Dissertation (THES)
   - Discussion (DISC)
   - Lecture/Laboratory combined (L/L)

   - Field Experience/Internship/Practicum (FLEX)
   - Field Experience/Internship/Practicum (FLEX)
   - Two-year Video/Lecture (TVL)
   - Two-year Video/Lecture (TVL)

17. Cross-Listed Courses

   - Course Title
   - Course Alpha & Number
   - Chair
   - Signature

18. Catalog Description:

   - This section will appear in the Catalog. Limit description to 35 words; up to 50 words for arts & music courses. Read instructions carefully before completing this section.

   - Overview of environmental issues and impacts associated with agriculture, specifically pest management issues, and options for environmentally responsible management and amendment of these impacts.

19. Justifications (Need to justify or revise above. Attach sheets as needed.)

   - Provide 300-level course in environmental issues; provide link between PEPS 210 and higher-level PEPS courses. See attached for detail.

20. Requested by:

   - PEPS
   - Dr. J. Kenneth Grace
   - 10/14/2003

   - Approved by:

   - 1st College or School
   - Dean
   - Signature

   - 2nd College or School
   - Dean
   - Signature

OFFICE USE ONLY:

   - Graduate Studies (all levels above)
   - General Education
   - Manoa Chancellor's Office

   - Signature

   - Date

   - Signature

   - Date

   - Signature

   - Date
1. Why is this course being requested?
   This course is intended to offer a continuance from PEPS 210 (Environmental Resources: Issues and Options), providing an overview of agricultural impacts on the environment, and ways in which these impacts are managed, with an emphasis on pests. Considerable emphasis will be placed on the importance of sustainability, invasive species and their management and conservation principles in the agricultural context. The aim is also to provide a primer on the environmental importance of sound pest and disease management, potentially encouraging students to consider higher-level PEPS courses. Brief introductions to a range of topics covered in detail in higher courses are therefore included here.

2. How will the content be organized?
   There will be two (75 min) or three (50 min) lectures per week. A course outline is attached.

3. What other courses at UHM closely parallel the proposed course; in what way will the latter make a distinct contribution?
   There is currently no other course at UHM that closely parallels the proposed course. PEPS 310 will consider aspects of agricultural impacts on the environment, and ways that these impacts can be managed. Emphasis will be placed on agricultural impacts, and specifically impacts associated with plant protection. These are aspects of agriculture that are often misunderstood and which give agriculture a poor image. Providing a background into the ways that agriculture is changing to deal with these problems will provide students with background in environmental management relevant not only agricultural situations, but many others where there is a conflict between exploitation and conservation. This course is intended to provide an overview of environmental impacts of agriculture within the perspective of the needs of society and its future, dependent on finite resources. This is likely to be an important issue in the near future in terms of environmental, legal and ethical considerations (it already is in many cases), and students will benefit from getting a perspective on environmental impacts from people involved in agriculture and the development of environmentally-compatible farming options. They may be inspired to contribute to environmentally compatible agriculture during their future careers.

4. Where or how does the proposed course fit into the current and future curriculum?
   The proposed course is intended to provide a continuance from PEPS 210, with a basic overview of environmental impacts of agriculture and measures that may be taken to manage or reduce these impacts. The course is intended to give students the option of furthering their studies in plant protection sciences, environmental protection sciences and other possibilities such as natural resource management.

5. Why is the number of credits and level justified? Explain prerequisites and absence thereof.
   The credits proposed are required to adequately cover the major topics in environmental impacts associated with agriculture. Students will be required to participate in group discussions and analyses of case studies, and complete reading
assignments which will augment the material covered in lectures. PEPS 210 provides an introduction to environmental resources; the proposed course essentially takes knowledge acquired in PEPS 210, and extends it to specific aspects of environmental impacts. PEPS 210 is therefore a logical prerequisite. It may be the case that certain students have accrued adequate background in various topics covered in other courses that PEPS 210 may be waived as a prerequisite by consent.

6. **How will the course assist students to achieve the critical skills and competencies expected of CTAHR graduates?**

   Students will be required to undertake assignments in addition to lectures, which together will train them in the skills and competencies expected of CTAHR graduates. Specifics are listed below:

<table>
<thead>
<tr>
<th>Category</th>
<th>Means:</th>
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<tbody>
<tr>
<td>Written communication</td>
<td>Case studies; preparation of discussion sessions; examinations.</td>
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<tr>
<td>Oral communication</td>
<td>Students will also be afforded the opportunity to enhance their critical capacity and communication skills, in that the course will be presented in such a way that students are encouraged to participate actively in classes. They will be required to complete reading assignments and provide critical opinions of the material covered during discussions in classes. Discussions will be led in such a way that any students who may feel uncomfortable with voicing their opinions are encouraged to express their thoughts. Students will be grouped according to their level of confidence with discussing issues, so that each gets a chance to voice her/his opinion among peers. Students from each group will be asked to provide feedback on their conclusions, both written and orally.</td>
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<tr>
<td>Problem solving and critical thinking</td>
<td>Case studies; group discussions of topical environmental issues.</td>
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<tr>
<td>Real world experience and global perspective</td>
<td>Case studies; field trips; occasional guest lecturers.</td>
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<tr>
<td>Computer skills</td>
<td>Internet searches for topical information; rudimentary introduction to GIS systems.</td>
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<tr>
<td>Business management</td>
<td>Introduction to ISO 14000.</td>
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7. **How will students be evaluated?**

   Two exams and a final exam; Case study evaluations and analysis.
8. What are the minimum qualifications for teaching this course? Is a qualified instructor now available?

Ph.D. (or M.S.) in biological sciences, preferably with a specialization in plant protection (entomology or plant pathology) and aspects of environmental protection. Instructors are available: M.G. Wright (Ph.D.) will be the coordinator, with team-teaching assistance from others.

9. How will the course be financed, assuming no further cutbacks?

There is no laboratory in this course and no significant costs are anticipated.

10. Has the course been offered before? Is there a demand for it?

This course has not been offered previously. Students completing PEPS 210 have expressed a strong interest in a further PEPS course that does not require an immediate change to entomology or plant pathology.
PEPS 310
Environment & Agriculture: Conserving and Cultivating
Course Syllabus

Team-taught: Potential Instructors: Dr. M.G. Wright, Dr. J.Y. Uchida, Dr. A.M. Alvarez,
Dr. B. Sipes, Dr. A.M. Wieczorek, Dr. Stephen Saul and guest lecturers.

The following topics will be covered in ~ 45 lectures:

1. **Agricultural impacts:** Food production;
   Habitat destruction;
   Environmental contamination associated with agriculture;
   Trade-offs to consider: food production vs. environment?;
   Positive impacts of agriculture;
   Ethics – cultivation vs. conservation;
   Conservation of germplasm;
   1st world vs. 3rd world perspectives.

2. **Industrial impacts:** Brief overview: Impacts of industry on habitats in comparison to agricultural impacts;
   Pollution from industry;
   Agrochemical companies;
   Comparison of industrial and agricultural impacts;
   Management systems, e.g. ISO 14000 series.

3. **Sustainability:** Inputs vs. outputs;
   Low-input agriculture;
   Cultural options;
   Environmental ethics: high-input and low-input agriculture
   Integrated Pest Management;
   Conservation agriculture concepts.

Selected Problems – With an Emphasis on Topics Germaine to PEPS:

4. **Invasive species:** What are they and why are they invasive;
   What defines weeds, pests;
   Invasive plants, insects, vertebrates, pathogens in Hawaii and elsewhere;
   Ethical considerations: global translocation of organisms;
   Impacts and management options.

5. **Insect pest and plant disease management:** Why do some species become pests;
   Magnitude of their impacts – agricultural, ecological and societal;
   Pest management options;
   Types of pesticides;
Ethics – insecticides, biological control; Potential effects of pesticides on humans; Non-target impacts: ecosystems, beneficial organisms; Novel directions in pesticide development.

6. Food contamination: Types of contamination – insecticide residues; EPA regulations; Pesticide residues; “Full-cup” concept and children’s diets with regard to pesticides; FQPA implications and implementation.

Managing Impacts – Cultivation with Conservation:

7. Biological control of invasive species:
   Concepts and implementation of biocontrol;
   Positive and potential negative impacts;
   Use in controlling weeds, insects, plant pathogens;
   Risk assessment;
   Ethical considerations – “homogenocene”, non-target impacts;
   Alternatives that may be combined with biocontrol - IPM.

8. Bioremediation:
   Concepts and implementation;
   Applications and benefits.

9. Biotechnology:
   Concepts and implementation;
   Application in pest management, food safety;
   Environmental impacts;
   Benefits and risks;
   Ethical considerations.

10. Amelioration / remediation of impacts:
   Conservation biology;
   Conservation agriculture;
   ECO-OK certification – with Hawaiian examples;
   PESP in Hawaii;
   Conservation areas and interactions with agriculture;
   Habitat corridors;
   Recent developments in environmental management relevant to agriculture;
   ISO 14000, international business practices and agriculture.