NREM 480: Tropical Forestry and Agroforestry

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Class Times: MWF 11:30-12:20, St. John 15
Lab Time: Fri. 1:30  
Office Hours: MW: 1:30-2:30  
F: 9:00-10:00

Agroforestry for Hawaii and Pacific Islands

Objective: (1) to understand the biophysical environment of the tropics, traditional and modern forestry and agroforestry practices, and the socioeconomic challenges to sustainable forestry; and (2) to use this understanding to develop model systems that can meet these challenges within the biophysical constraints of the tropical environment.

Assignments*:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>% of Grade</th>
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<tbody>
<tr>
<td>Participation in class</td>
<td>10</td>
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<tr>
<td>Written reviews and presentations of reading assignments</td>
<td>15</td>
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<tr>
<td>Problem sets and related lab assignments</td>
<td>30</td>
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<tr>
<td>Mid-term exam</td>
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<tr>
<td>Final project</td>
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individual research articles and other book chapters, as appropriate (see Page 2)

Assignments:

1. Written reviews and presentations of reading assignments; occasional.  
   Small groups (2-3 students) will be assigned to present the information from a reading assignment during a normal class period. Each group will give a 5-10 min. presentation of the material and include time for questions or discussion of the major topics. Each team member will turn in a 1-page review of your section of the reading. I will provide written feedback on the written review and the oral presentation.

2. Lab assignments; weekly.  
   These will include a variety of assignments associated with the laboratory topics. Problem sets will be based on handouts from the instructor. Other assignments will include reviews of discussion sessions and reports on field trip activities.

3. Mid-term exam  
   This exam will cover all topics in the class up to that point in the semester. Questions will require short essay/discussion answers.

4. Final project  
   See supplement on next page.
**NREM 480: Final Project**

**Objective:** Use what you’ve learned to design a model forestry or agroforestry system within a specific region of the world that provides specific products or services for a defined group of people or individuals (e.g., a family, a small community, etc.).

**Guidelines:** The location, species of plants, and type of uses are up to you, but the system must fit within the biophysical constraints of the location and plants selected, and the management must also be reasonable, based on the resources of the location, the value of the products, and our current understanding of management practices. You are encouraged to be creative with your design, but you must justify your choices with sound reasons. The more “traditional” a system you choose, the more information and justification you will be required to provide. Thus, there is a trade-off between creativity or innovation and the evidence needed to support it as a viable system.

**Format:** I would like you to write an 8-10 page paper (single-space, 10-12 point font, 1-inch margins all around) describing the various aspects of your system (taken from the example list below). I would also like you to prepare a 10-minute presentation (overheads, slideshow, hand-outs, or whatever) illustrating the design of your system and how it provides useful products and services for the people in the region you selected. Please include the biophysical and socioeconomic dimensions of your system.

**Deadlines:** A title and basic abstract of your system is due by the mid-term break. I will provide written and/or oral feedback to help you find resources necessary to design and describe your system. A draft of the report is due the last full week of class (prior to “dead week”), but can be handed in at any time. I will review your draft and provide comments to help you improve the final report. The final report is due on the date of the final exam. You will also give your oral presentation at that time.

**Biophysical Aspects to Consider**
- Climate: rainfall, temperature, elevation, wet-dry seasons, wind exposure, salt spray (?)
- Potential Plant Growth Rates in these climatic conditions
- Soil Characteristics: nutrient availability, water-holding capacity, rooting depth, pH, etc.
- Plant Nutrition: nutrient demands, nutrient cycling, fertilization (?)
- Herbivory and Disease: Is this a consideration for your species in this area?
- Plant-plant interactions: resource competition, N-fixation, shading, wind protection, etc.
- Plant-animal interactions: food source, live fencing, shade, damage to plants, etc.

**Management Practices**
- Plant Propagation and planting techniques
- Pruning, thinning, spacing, orientation
- Irrigation, fertilization, weeding, etc.
- Product harvesting: methods, timing, frequency, etc.
- Rotation length and crop/tree/product sequences

**Socioeconomic Aspects**
- Who’s the intended user of the system?
- Where will the products be used?
- What is their potential raw value?
- Is there value-added potential?
- Basic cost-benefit analysis
- Risk assessment (e.g., crop failure or changes in market value)
- Government barriers or opportunities
- Technological or infrastructural barriers and opportunities
- Other competing land uses
- What about population growth?
- What about land tenure and security?