**Curriculum Details**

**Proposed By**

Proposed by: ringuett

**Course Record ID**

587

**Entry Type**

New (draft)

**Notes and Special Changes**

**Stakeholders Consulted**

1. Justification

2. Course Alpha

AG

3. Course Number

171

4. Course Title (long)

Farm Renewable Energy Systems

5. Course Title Short

6. Course Credits

7. Course Credit Upper Range

0

Repeatable

Will default to 98 (this is how often someone can sign up for the course (not how many times they can apply it to a degree)

8. Course Description

This course explores the various renewable energy systems potentially employable on small farms. Topics such as solar, solar thermal, wind, micro-hydraulic, biomass, and hybrid technologies are covered in the course.

9. Course Pre-Requisites

None

10. Course Co-Requisites

11. Course Recommended Preparation

12. Contact Hours (lecture, lab, lecture/lab)

3 hours lecture

13. Department

Natural Sciences

14. Cross-Listing

15. Course Content

Understanding and management energy systems that affect farming. Sustainable Farming requires that the total energy inputs do not exceed the total energy output. This course will cover techniques in energy production from indigenous renewable
energy systems. This course intends to teach farmers on how to manage their energy requirements and develop their own energy sources. In particular it will focus on farm and home related operations by using three basic strategies: Energy Efficiency, Energy Conservation, and Renewable Energy use. This course will give them the skills to assess their energy needs and to practically apply renewable energy systems to meet those needs. Categories to be covered by this course are: I. Renewable Energy II. Energy Terms III. Assessing a Site for Renewable Energy IV. Renewable energy systems V. Transportation Clean Energy Farming: Cutting Costs, Improving Efficiencies, Harnessing Renewables WHY SUSTAINABLE FARMING? Principals of ecological design and 4 Ecological Laws Upgrade Machinery and Equipment Design Efficient Buildings Designing and building efficient refrigeration Reduce Food Miles Energy efficient transportation FARM TO SAVE ENERGY, CURB POLLUTION Diversify Cropping Systems Energy efficiency in Aquaponics Cut Back on Tillage GENERATE ENERGY ON THE FARM Tap into the Wind, Sun, and Water Capture Fuel from Animal Manure and Plant Waste

16. Course Competencies

To develop an understanding of : 1)The many forms of energy that are utilized in farming. 2) Evaluating a site for possible renewable energy harvesting. 3) The costs of renewable energy systems. 4) Determining financial and technical support for clean energy farming.

17. Assessments, Tasks, and Grading

Activity Point Exams (2 * 200 pts) 400 40% Quizzes (4*40 pts) 160 16% Assignments (9*10 pts) 90 9% Business Plan Project 250 25% Participation * 100 10% 1000 100%

Grading Options

Will be set to Banner default

18. Auxiliary Materials and Content

Instructor materials (provided by instructor): Renewable Energy Equipment ( Solar and Wind Kits)

19. Additional Activities outside of class and class time

Field trips to farms that currently incorporate the techniques and technologies. Field trips may take place on Saturdays.

20. Special Costs connected to the course

Student Costs: Book purchase: Solar Living Source Book ($35) Hard copy of course
support materials ($30) Transportation to Field Trip locations, Carpooling encouraged.

21. What are the Student Learning Outcomes?

1. Evaluate photovoltaic systems applicable to small farms
2. Evaluate solar thermal applications for small farms
3. Evaluate biomass systems applicable to small farms
4. Evaluate wind systems for small farms
5. Evaluate micro-hydraulic systems for small farms
6. Evaluate hybrid system applications for small farms

22. Connection between the Course SLOs and the College’s General Education Outcomes

GenEd: Identify information needed in a variety of situations, and access, evaluate, and use relevant information effectively and responsibly.

23. How does the proposal connect to the college’s strategic plan?

4.7. Contribute to meeting the State’s incumbent worker goal by increasing enrollment of 25-49 year olds in credit programs by 3% per year.
4.8. Increase the number of degrees and certificates awarded in Science, Technology, Engineering, and Math (STEM) fields. (includes both credit and noncredit) by 3% per year.

24. Describe the staff that will be needed

Instructor with experience in energy systems. Guest speakers on specific topics. Current Agriculture Instructor may teach the course if required.

25. Describe the facilities that will be needed, including special rooms

Typical lecture classroom

26. Describe any other resources that will be needed

27. How will the staff, facilities, and other resources for the course be secured?

Kits will be purchased using C3T funding. No cost to the college. The kits will be reused from year to year.

28. Certificates
29. Connection to the AA degree
AAEelect

30. Maximum Credits Towards an AA Degree
3

31. List any similar classes taught at outside of the UH system
MIT IAP 2009 A First Course in Renewable Energy

32. List any similar classes taught at campuses in the UH System.
Maui College Ener 103 Energy production Systems

33. How, if at all, is the course intended to count in lieu of a course taught at a four-year campus.
None

34. How, if at all, is the course similar to upper-division courses in the UH System.
No

35. How does the course articulate with four-year programs (Gen Ed)?
No

36. List any articulations between this course and any four-year program.
No

End of Proposal