CEM163 Fall 2011
FUNDAMENTALS OF RENEWABLE ENERGY SYSTEMS

<table>
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<tr>
<th>Instructor</th>
<th>Class Time: Th. 6:00 -- 9:05 PM</th>
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<tbody>
<tr>
<td>Classroom: 615</td>
<td>Office Hours: Th. 5:30 -- 6 / 9:05 -- 9:35 PM and by appt.</td>
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<tr>
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<tr>
<td>Phone: 477-3700 x1957</td>
<td>Section # 72275</td>
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SCOPE:
This course is a broad introduction to solar and other renewable energy sources. It will cover energy basics, active and passive solar, wind, water, biofuel and biomass resources. Both large scale, grid interactive and small scale stand-alone systems will be discussed. Energy collection, site evaluation, design analysis of various systems, material use, and methods of construction will also be covered in addition to an overview of California and US energy policy and global energy use.

TEXTs (mandatory):
Your Solar Home: Student Guidebook -- Rahus Institute (Solar Schoolhouse), 2009
   Available a couple or few weeks into the semester, from instructor ($15 to Rahus)
   Or, if you want it sooner, and don’t mind paying a little more: ISBN 978-0-9776342-4-8

+ HIGHLY RECOMMENDED:
Out of Gas – by David Goodstein
Got Sun? Go Solar! -- by Rex Ewing

9-1 Registration, Introduction, Class/Project Overview
9-8 Energy Basics and History; Sun/Earth Geometry
9-15 FIELD TRIP: ALL-SOLAR HOME
9-22 Overview of R.E. Technologies, Solar Water Heating; Peak Oil
9-29 Independent Study; Project Work
10-6 Green Building and Energy Efficiency; Sustainable Transportation
10-20 Energy and Water Supply Issues; Biomass Energy and Biofuels
10-27 Windpower -- Small and Large Systems
11-3 Passive Solar Design, Daylighting; Building Science
11-10 Solar Process Heat, Wastewater Decontamination
11-17 Water Energy: Micro-hydro, Wave, Tidal, OTEC
11-24 Thanksgiving Holiday – NO CLASS
12-1 Geothermal Energy; Concentrating Solar Power (CSP)
12-8 Energy Storage and Hydrogen Systems
12-16 FINAL EXAM
Important Dates
> Sept. 10 – Last day to add or register, AND last day to drop and receive reversal of charges or refund of enrollment, transportation fees, or student activity card fee
> Sept. 24 -- Last day to drop withOUT receiving a “W” grade
> Oct. 3 -- Last day to request pass/no-pass option
> Nov. 19 -- Last day to drop WITH a grade of “W”

Learning Outcomes
1. Analyze renewable and efficient energy sources.
2. Critically assess active and passive solar energy collection systems, site evaluation, design analysis of various systems, and materials and methods of construction.
3. Investigate various renewable energy technologies and their relationship with energy conservation.
4. Compare and contrast the myriad of renewable energy sources.

ATTENDANCE
Class attendance is critical and will be noted. The funding for community colleges is largely based upon student attendance and excessive absence is reason for being dropped from class. Excessive absence is defined as more than two absences during the semester.

If you are absent for illness or personal necessity, inform me by leaving a message IN ADVANCE on my e-mail or phone. This will not excuse your responsibility for the lecture material but will indicate your continued interest in the class.

TESTS/GRADERS
There will be 2 quizzes and a final exam. Each quiz will be given at the beginning of class for about half an hour (quiz dates to be announced well in advance). Questions will come from material covered in the lectures and assigned reading materials. Please purchase a package of “Scantron” sheets at the book store. A research project on a selected renewable energy topic ( ~ 7+ pages in length) is optional, but required for any grade higher than a B. A guideline to note: The time put into a semester project should be somewhere in the range of 20+ hours. Multiple smaller projects can be combined for an acceptable semester project. Selection of your research topic(s) must be submitted by the fourth class (Sept.22). (You may also choose to build or design something, with documentation.)

If you do a semester project, it will be weighted to 25% of your grade for the course, and the remaining 75% will be split as follows: homeworks and class participation (10%), quiz 1 (20%), quiz 2 (30%), final exam (40%). If you do not do a semester project, your grade will be determined according to the latter allocation among those four non-project items, with a maximum semester score of 90. With or without a project, a semester score of at least 60 is needed to pass the course. If you select the grade option, here is the scheme associating grades to semester scores:

91 to 100   A
81 to 90    B
71 to 80 C
60 to 70 D.

If you desire the credit/no-credit option, you must inform me early in the semester.

STUDENTS WITH DISABILITIES
We encourage students with disabilities, including “invisible” disabilities such as chronic diseases, learning, and psychological disabilities, to explain their needs and appropriate accommodations to me during my office hour. Please bring a verification of your disability from the Learning Skills or DSP&S offices and a counselor or specialist’s recommendations for accommodating your needs.

COURSE WEBSITE should be checked often for announcements, assignments, etc.:

<http://www.cabrillo.edu/~jjordan>.