New Course: **Sustainability: Ecology & Economics**

By: Jeffrey Pompe, Department of Economics, Francis Marion University
Travis Knowles, Department of Biology, Francis Marion University

The course “Sustainability: Ecology and Economics” was offered during Fall semester 2002 at Francis Marion University. It was cross-listed as a special topics course under Biology and Economics. A total of thirteen students completed the course. Although evaluations are not available yet since the course was just completed in December 2002, informal student comments to the instructors were of a highly positive nature. They seemed to enjoy the interdisciplinary approach, which was new to most of them.

A course syllabus is attached below. The students wrote two exams on economic and ecological principles as they apply to the concept of sustainability, at both global and regional scales. In addition to the exams, the students completed a research paper on economics and sustainability, and a team project on an FMU campus energy profile.

Research paper topics included wetland mitigation banking, urban sprawl and “smart growth,” air pollution, coastal development, and water supply issues. Market incentive approaches were emphasized throughout.

The class project researched total campus energy use on a monthly basis and energy use per square foot of maintained building space. Initial calculations of carbon emissions for the campus, proposed energy conservation for new campus construction projects, and research on incentives and other programs to encourage energy conservation were also completed. The results of these team projects will allow baseline information for comparison with other campuses, and to track our progress toward improved energy conservation over time. The results of the research are currently being developed as a web page, which will be posted later this semester.

The class also participated in a field trip and guided tour of Dewees Island, touted as a model of environmentally sensitive development.
Welcome to our new course on sustainability, where we will examine environmental problems from an interdisciplinary perspective. We will try to show how ecologists and economists view environmental issues, and make an attempt to synthesize the two academic perspectives in our search for solutions.

This course will of necessity include some lecture, to make sure that everyone has sufficient background in basic ecological and economic principles. Beyond that, we very much hope to entertain an atmosphere of classroom exploration and discussion. Several readings will be assigned for discussion throughout the semester. We also expect to invite several guest speakers to address the sustainability concept from their particular perspectives.

This course will also involve participation in three off-campus field trips that illustrate principles of sustainability.

A course web page has been established at http://blackboard.fmarion.edu/. Please register for the course by following these instructions (if you are not already familiar with Blackboard):

1) Click the “Create Account” button on the opening page. 2) Fill out the required fields (indicated by an asterisk) in Steps 1-3. Do not forget your user name and password! You will need them to access this course (and any other Blackboard courses you may enroll in) in the future. Note that you must have an active e-mail account. 3) In Step 4 (“Other Information”), please provide a telephone number; all other blanks are optional. After you have created your account, click on the middle tab at the top of the page (“Course”). Scroll down until you find “Sustainability: Ecology and Economics,” and click on the “Enroll” button. You will be asked for an access code, which is 306340. Check the web page and your e-mail daily for special announcements or assignments. (Note: once you have created an account, you need only click the “Login” button on the Blackboard opening page thereafter).

Grading: There are two exams, each worth 25% of your final grade. If an exam must be missed due to an emergency, we must be notified before the exam. An unexcused absence will be graded as zero. The dual project comprises the remaining 50% of your final grade.
Tentative Syllabus

Date       Topic                                                                                     Reading/Assignments
Aug. 22    Introduction to the course                                                              
Aug. 27    The nature of science.                                                                 lecture, discussion
Aug. 29    Science: probability, uncertainty, and “proof”                                        Science and public policy.
            Science and public policy.                                                                 lecture, discussion
Sept. 3    The nature of economics.                                                                P/R Chapter 1,2
Sept. 5    Resource allocation: mkt. Successes and Failure.                                        P/R Chapter 3
Sept. 10   Resource allocation cont.                                                              “ ”
Sept. 12   Ecological science: a systems perspective.                                               Lecture, readings
Sept. 17   Ecology continued.                                                                     Lecture, discussion
Sept. 19   Valuing resources.                                                                     P/R Ch. 4
Sept. 24   Valuing resources.                                                                     “ ”
Sept. 26   Sustainability defined.                                                                Lecture, readings
Oct. 1     Scientific evidence for unsustainability.                                               Lecture, readings
Oct. 3     Evidence for unsustainability.                                                          Lecture, readings
Oct. 8     Exam 1                                                                                  “ ”
Oct. 10    Ecological footprint, concept.                                                           Wachernagel and Rees
          Chapters 1-3                                                                               
Oct. 15    Ecological footprint, cont.                                                              “ ”
Oct. 17    Resource issues.                                                                       P/R Ch. 5
Oct. 22    Resource issues.                                                                       P/R Ch. 6
Oct. 24    Pollution control policies.                                                             P/R Ch. 7
Oct. 29    Pollution control policies.                                                             P/R Ch. 8
Oct. 31    Global pollution.                                                                     P/R Ch. 8
Nov. 7     Ecological economics- an attempt at Synthesis.                                          in-class video/readings
Nov. 12    Ecological economics, continued.                                                          Discussion
Nov. 14    Economic Growth, Trade, and the Environment                                             P/R Ch. 9
Nov. 19    Guest lecture/video/discussion                                                           
Nov. 21    Guest lecture/video/discussion                                                           
Nov. 26    Group project presentations                                                             

Final Exam: Thursday, Dec. 5, 3:00-5:00 p.m.

Dates of Note:
September 17  Paper outline due
September 20  Last day to drop a course without academic penalty
November 4-5  Fall Break
November 15  Last day to withdraw from a course
November 21  Paper due
November 26  Project web pages due; group project presentations
November 28-29 Thanksgiving Break

Paper Assignment

The purpose of the paper is to discuss a policy solution to an environmental problem that threatens sustainability. Most likely you will use the market incentive approach for your policy solution. Use economic principles and information from this class to make your case. You may use empirical findings and theoretical models to critique or comment on a relevant topic.

Choose a topic from the approved list of topics. I will consider an alternative topic, but you need to clear it with me. Begin thinking and collecting information about your topic immediately. Notify me of the topic that you choose as soon as possible. A one-page type general outline or your paper is due on or before the date listed.
The paper should be 10 typewritten, double-spaced pages, not including footnotes and bibliography. Follow any standard manual for style. Although content is the major determinant of your grade, grammar, spelling, style, and organization are also important. I expect you to use numerous sources in your paper, but do not simply paraphrase or quote your sources throughout the paper. Be careful to avoid plagiarism when paraphrasing or quoting sources. You may want to use the resources of the Writing Center.

We will keep your paper, so be sure to make a copy for yourself. Late papers will not be accepted.

Class Project: Campus Energy Profile

The purpose of this project will be to create an energy profile of the Francis Marion University Campus, following the suggestions in the handout from Campus Ecology by April Smith (Living Planet Press, 1993).

The class will be divided into teams which will conduct research and/or interviews to answer the following questions. The teams will compile the information for a class web page and present the results during the last class period. Any photographs of the campus that you feel might be appropriate for the web page are welcome.

Team composition and research questions:
1) Jontell Johnson, C.J. Barrineau, Cristal Robbins: Total campus energy bill for past year; total campus energy use (KWHs) per square foot of maintained building space.
2) Sarah Miller, Bryan Holt: Monthly campus energy use over the last year; campus energy use per capita, based on campus population statistics.
3) Dawn Barfield, Grey Raines: Total annual campus energy use for the past five years; energy use data for individual buildings on campus (if available, over any standard time period).
4) Paige Grooms, Tyson Spring, Chris Wilson: Energy conservation plans for future new building and renovation projects on campus.
5) Rachel Dampier, Chandler Street: Sources/types of energy used by the FMU campus. Convert to annual CO2 emissions if possible.
6) Jay Garner, Richard Shelton: Research/suggest possible incentive policies for energy conservation that might appeal to different campus constituencies (students, faculty, administration).

Some suggested resources/sources for information:

Questions 1-4: Mr. Michael Parrott, FMU Physical Plant Engineering Coordinator (rparrott@fmarion.edu; 661-1104)
Questions 4: Professor Lisa Pike, FMU Department of Biology (lpike@fmarion.edu; 661-1411)
Question 5: Carolina Power and Light (CP&L) (http://www.cpl.com/contact)
General references: library, internet.

Not that these resources are suggestions. Be creative in your research and search for sources; comment on the significance of your findings.

Field Trips

Three field trips to sites that illustrate principles of sustainability are scheduled. Our plan is to visit a wetland mitigation bank, a native longleaf pine ecosystem and pine plantation, and Dewees Island, an example of environmentally-sensitive development. The Dewees Island trip will likely occur on a Saturday, and will necessitate a Friday night stay at the Baruch Institute in Georgetown, SC. The other two trips will be day trips. The final dates and details of these trips will be forthcoming over the next two weeks. All class members are expected to participate in the field trips.

Extra Credit

You are invited to participate in a faculty/student book discussion at the end of the semester (Friday, November 15). The book for this semester is The Future of Life by Edward O. Wilson (ISBN 0-679-45078-5). A few copies will be ordered by the campus bookstore; you may also purchase the book at amazon.com or other booksellers. Reading the book and participating in the discussion will be worth three points of extra credit on the final exam. More details about the location of the discussion will be available soon.