CE 618 / FABE 618 / ENR 618
Ecological Engineering and Science

Winter 2007, 4 Credit hours, UG level

This course is cross-listed between three academic units: Department of Civil and Environmental Engineering & Geodetic Sciences (CE 618, call number: 05040-1), Department of Food, Agricultural and Biological Engineering (FABE, call number: 00828-0), and School of Environment and Natural Resources (SENR, call number: 14874-1).

Course Description: Definition, classification, and practice of ecological engineering. Course describes ecological ecosystems, ecosystem restoration, and the utilization of natural processes to provide societal services and benefits to nature.

Class Times & Location: Tuesdays and Thursdays, 8:00-9:48 AM, Kottman 104

Course Prerequisites: Junior standing with at one course in one of the following subject areas; biology, ecology, engineering, or geology.

Instructors:

- Virginie Bouchard, School of Natural Resources, 412B Kottman Hall, Tel. 688-0268, email: bouchard.8@osu.edu
- Robert Sykes, Department of Civil and Environmental Engineering & Geodetic Sciences, 417A Hitchcock Hall, Tel. 292-2748, email: sykes.1@osu.edu
- Jay Martin, Department of Food, Agricultural and Biological Engineering, 230C Ag Eng Building, Tel. 247-6133, email: martin.1130@osu.edu

Text: Readings will be identified and can be downloaded from the OSU libraries website. Those not available will be distributed in class. Lecture notes will be posted on CARMEN. The following books are recommended as reference material (placed on reserve in Agricultural Library).

Mitsch, W.J. and Gooselink, J.G. 2000. Wetlands. John Wiley & Sons, New York.

Mitsch, W.J. and Jorgensen, S.E. 1989. Ecological Engineering: An Introduction to Ecotechnology. John Wiley & Sons, New York.

Kadlec, R.H., Knight, R.L. 1996. Treatment Wetlands. Lewis Publishers, Boca Raton, FL.

Course Objective: To enable the students to: identify the key physical, biogeochemical and ecological processes occurring in ecosystems and utilize these processes to provide societal services; identify benefits of ecological engineering technologies (i.e., holistic solutions, energy savings, costs savings); apply natural processes to guide restoration and creation of ecosystems; and learn the fundamental design considerations of ecological engineered systems. These

objectives will be achieved with a combination of lectures, assigned exercises, readings, and a design project.

Methods of instruction: The course is composed of two 2-hour weekly classes. The course will expose the students to fundamental understanding of ecological engineering in order to achieve the course objectives listed above. The lectures will also be built around the design project that the class will work on during the quarter. Indeed, the design project might be considered as the centerpiece of the course. Time will be given during the lectures period for discussion of the design project.

Design Project: This problem-based learning course will focus on applying concepts of Ecological Engineering to design a wetland to treat stormwater runoff from the OSU medical center . The class will be divided into groups, and each group will work on the project. Each group will deliver a short oral presentation on January 25 (during class) to present the preliminary ideas. A final oral presentation will be held in class on March 8 (the last day of class).

Course Evaluation: The grade will be based on 100 possible points, as detailed below. The two midterms will determine each student's degree of mastery of specific material covered in the course, and also to see how well each student can synthesize this material. There will be no final during final week. The absence of final should allow the class to spend extra time on the design project at the end of the quarter.

1st Exam	25 pts
2nd Exam	25 pts
Class Assignments (3)	15 pts
Class Participation	5 pts
Design Project	30 pts
(Preliminary design	5 pts)
(*Individual* report*	15 pts)
(Oral *group* presentation	10 pts)
Total	100pts

*****The text for this report must be written *independently* by each group member. The same images, pictures and tables can be shared between group members.

Office Hour Policy

Our office doors are generally open, and if possible, we will address your questions and needs as soon as possible. However, you are encourage to call, e-mail, or see us after class to schedule an appointment. If you have just a few quick questions, we may want to discuss them right after class.

Course Policies: *Incompletes* will only be considered if warranted by official OSU policy. *Late assignments* will not be accepted.

Academic misconduct: Submitting plagiarized work to meet academic requirements, including the representation of another's work or ideas as one's own; the unacknowledged use and/or paraphrasing of another person's work; and/or the inappropriate unacknowledged use of another person's idea; and/or the falsification, fabrication, or dishonesty in reporting research results, shall be grounds for charges of academic misconduct. Please see the following web site for more details on academic misconduct and the code of student conduct.
http://oaa.osu.edu/coam/home.html

Disability Statement: All students with disabilities should contact the instructors privately to arrange proper accommodations.