

Spring Quarter 2007
Food, Agricultural, and Biological Engineering 652 (call # 00829-4)
Mon/Wed 2:00-3:18, Rm. 104 FABE (Lab 2-4:48 Friday)

Ecosystems for Waste Treatment

Instructor: Dr. Jay Martin
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Office hours by appointment or directly after class.

Credits: 4 Level: U G

Prereq: EEOB 413, or NAT RES 725, or FABE 625 or CIVIL ENG 520, or permission of instructor. Senior or graduate status required.

Interdisciplinary Learning:

Students with engineering and/or ecology backgrounds are encouraged to take this class. A goal of the course is to integrate students with engineering, ecology, and other backgrounds to foster a beneficial, interdisciplinary learning environment.

Course Description: By designing and building ecological mesocosms for waste treatment and reviewing case studies, students will learn to design ecosystem-based systems to purify water and air.

Course Objectives (with American Board of Engineering and Technology (ABET) criteria—fulfillment of ABET criteria are required to maintain accreditation for departments of engineering)

At the conclusion of the course students will be able to:

- ◆ Integrate engineering and ecological principles to design ecosystem-based systems to purify water and air (Criteria 3a,c,d,e,g,j,k).
- ◆ Identify and describe the main components and processes of ecosystems fundamental to waste treatment design (Criteria 3c,j).
- ◆ Evaluate and identify ecosystem technologies for waste treatment (Criteria 3b,c).
- ◆ Demonstrate advantages of relying on ecosystems to restore water and air quality when compared to other approaches (Criteria 3b,h,j).

Grading: Quiz 5%
 Exam I 15%
 Exam II 15%
 Research Project (describe project) 10%
 Research Project (written report) 40%
 Research Project (final presentation) 15%

Quiz: A quiz covering introductory material will be taken during week three. This is intended to test teaching and learning approaches early in the course, and will familiarize students with the instructor's testing methods.

Exam I: The first exam will be given during the 5th week of the course.

Exam II: The second comprehensive exam will be given during the ninth week of the quarter. This may include questions regarding the design and research projects.

Research Project: Throughout the quarter the students will re-design and monitor an ecological system used to treat wash-water from the campus dairy farm. In 2007 this system will treat washwater from the OSU dairy facility. The grade will be based on weekly progress reports, participation, oral presentations, and a final report.

Late Assignments will not be accepted unless arrangements are made before the due date.

Course Logistics: The class will meet two times per week (78 minutes) and have a weekly 3-hour lab to work on the design project. It is anticipated that class time may substitute for lab time during intensive phases of the design project.

Field Trips: The class will take one trip to visit the Oberlin College Living Machine (not mandatory).

Texts: Assigned readings are listed on the schedule on the Carmen site. Many of the journal articles are also on this site, but you may have to download some from the OSU library. Some readings will be distributed in class. A list of additional references can be found on Carmen.

Academic Misconduct: All students are expected to adhere to the Rules and Regulations of Ohio State University and, in particular, to the rules regarding 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; the inappropriately unacknowledged use of another person's idea; and/or falsification, fabrication, or dishonesty in reporting research results shall be grounds for charges of academic misconduct. Such activities will be reported to the OSU Committee on Academic Misconduct.

Disability Statement: All students with disabilities should contact Dr. Martin privately to arrange proper accommodations.