

Natural Resources 726 (Call # 15196-1)  
**Wetland and River Restoration**  
Winter Quarter 2008

**INSTRUCTOR:**

William J. Mitsch, Ph.D.  
Professor of Natural Resources, Environmental Science, and Ecological Engineering  
107A Heffner Wetland Research and Education Building  
Wilma H. Schiermeier Olentangy River Wetland Research Park  
phone: 292-9774                      email: mitsch.1@osu.edu

**TEACHING ASSISTANT:**

Blanca Bernal  
128 Heffner Wetland Research and Education Building  
Wilma H. Schiermeier Olentangy River Wetland Research Park  
phone: 688-8410                      email: bernal.19@osu.edu

**OFFICE HOURS/APPOINTMENTS:** by appointment

**COURSE LOCATION:**

101 Heffner Wetland Research and Education Building (101HW)

**TIME:** Mondays & Wednesdays, 8:30 to 9:45 AM

**PREREQUISITE:** NR 725 Wetland Ecology and Management

**TEXTBOOKS:**

Mitsch, W.J. and J.G. Gosselink. 2007. Wetlands, 4<sup>th</sup> ed., John Wiley, Hoboken, NJ  
Chapters 12 and 13

Mitsch, W.J. and S.E. Jorgensen. 2004. Ecological Engineering and Ecosystem Restoration. John Wiley, Hoboken, NJ Chapters 1-5, 7-10, 13

**CREDIT HOURS:** 3

**COURSE DESCRIPTION:**

This advanced ecology graduate course will be based on three parts:

- 1) introduction of ecological engineering and ecosystem restoration
- 2) lectures on the following 4 aquatic ecosystem topics:
  - a. river restoration
  - b. wetland creation and restoration
  - c. coastal restoration
  - d. treatment wetlands
- 3) detailed investigations/presentations by students of selected recent peer-reviewed papers in the primary literature on the same 4 topics covered in the introductory lectures.

**FUNDAMENTAL CONCEPTS:**

Fundamental concepts of ecology and ecological engineering we hope to cover in this course:

- self-design
- pulsing
- scale effects of science related to creation/restoration
- “aging” of treatment wetlands
- organisms of concern (e.g. mosquitoes) in treatment wetlands

- ecosystem engineering
- invasive and nonnative species
- assessment of wetland creation/restoration success
- biological aspects of stream/river restoration
- tidal subsidies
- riparian/river functioning
- stream geomorphology restoration
- watershed restoration for deltaic and coastal improvement

**COURSE REQUIREMENTS AND GRADING:**

Each class participant will be required to prepare two presentations on papers agreed to by instructor. There will also be a midterm examination based on early lectures. Grades will be based on attendance/participation (20%) /midterm (30%) and two presentations (50%)

There will not be any final examination or term papers required.

**SCHEDULE:**

<b>Date</b>	<b>Topic</b>	<b>Reading Assignment</b>
Jan 4	Syllabus Introduction/Ecological Engineering Chapters 1-2 (M&J)	
Jan 7	Ecological Engineering Principles/ Ecological Engineering in China	Chapters 3-5, 13 (M&J)
Jan 9	River Restoration	Chap 7 (M&J)
Jan 14	Wetland Creation and Restoration	Chap 12 (M&G)
Jan 16	Coastal Restoration	Chap 9 (M&J)
Jan 21	NO CLASS	
Jan 22 (not class meeting)	LAST DAY FOR SUBMITTAL OF 2 PDF'S	
Jan 23	Treatment Wetlands	Chap 13 (M&G)
Jan 28	Catch Up/Review	
Jan 30	Midterm Exam	based on lectures/readings
Feb 4 – Mar 5	Student Presentations	assigned papers

**PRESENTATION GUIDELINES:**

1. Each student will review 2 journal (peer-reviewed) published papers of his/her choosing from 2 of the 4 ecosystem restoration/creation categories:
  - a. river restoration
  - b. wetland creation and restoration
  - c. coastal restoration
  - d. treatment wetlands

2. Title should be approved by Dr. Mitsch, so it is recommended that you get this approval in the first two weeks of the course and no later than **Tuesday January 22**. Please provide instructor and teaching assistant a pdf copy of each of your two papers.
3. A list of the papers and the schedule of presentations will be completed and posted on the web page (see below) as soon as we receive copies of the papers and approve them. Presentation dates for each student will be determined by a fair approach that considers topic and avoidance of giving two papers in the same week.
4. Paper pdf's will be put on the Olentangy River Wetland web page at <http://swamp.osu.edu> under university courses/programs→Courses→ENR 726  
  
or go to [http://swamp.osu.edu/Academics/academic\\_courses.html](http://swamp.osu.edu/Academics/academic_courses.html)
5. Because of class enrollment this term we will have to accommodate 15 x 2 = 30 paper presentations. This will require 3 presentations per day x 10 days.
6. Student should design each presentation to be a 20-minute presentation of the paper, including methods, results, review of the papers. I strongly recommend powerpoint presentations with copies of appropriate figures and tables from the publication.
7. **Questions and discussion from the audience are highly encouraged. In fact, that is the point. So audience is expected to read the papers PRIOR to the presentations and come prepared to discuss.**
8. Some suggestions on the presentations (you will be graded on presentation quality, not just your presentation and review of the work):
  - PLEASE ENLARGE DIAGRAMS/TABLES SO AUDIENCE CAN READ THEM.
  - PLEASE BE PREPARED BY 8:15 AM ON THE DAY YOU ARE SCHEDULED TO SPEAK. TA WILL BE THERE TO ASSIST.
  - PROVIDE YOUR REVIEW OF THE PAPER AT THE END OF YOUR PRESENTATION, INCLUDING ITS GOOD POINTS AND BAD.

Recommended Journals\*

Ecological Engineering  
 Restoration Ecology  
 Ecological Restoration  
 Ecological Applications  
 Water Science & Technology  
 Wetlands  
 Wetlands Ecology & Management  
 Journal of Environmental Quality  
 Ecological Modelling  
 Ecological Economics  
 BioScience  
 Environmental Science & Technology  
 Frontiers in Ecology and the Environment

\* several of these journals are available in the Wetlands library, 130 Heffner Wetland Bldg