

**Purdue University
Department of Agronomy**

AGRY 399W Environmental Hydrology, Spring 2007

201 Smith, MWF, 1:30 - 2:20 pm

Course Description: This course is designed to provide you with both the basics of how water moves through the environment and the most current theories as to how hydrologic response is modified by environmental change at a variety of spatial scales. There are no prerequisites and this course can serve as the first in a series focused on watershed management, water quality or planning. As such, it should be of interest to natural science students in a variety of disciplines, including Agronomy; Forestry and Natural Resources; and Earth and Atmospheric Sciences.

Course Objectives:

- Become familiar with hydrological processes, interactions and their representations over scales from point to "continental" and times from seconds to years. The major emphasis is on surface and near surface phenomena.
- Gain qualitative and quantitative understanding of land surface water budgets and how they respond to environmental change.
- Develop written communication skills and problem solving abilities on topics related to surface water hydrology.

Instructor Information:

Instructor: Dr. Laura Bowling

Office: 3-337 Lilly Hall (3rd floor, 300 hallway)

Phone: 494-8051 (office), 567-1123 (home)

E-mail: bowling@purdue.edu

Office Hours: Thur. 1:00 - 3:00 pm; Fri 9:30 - 11:30 am

Availability: I have an "open door" policy, that is if my office door is open, feel free to stop by with any questions about the course, homework or readings. However, I am often not in my office and email is often the best way of contacting me. Questions regarding the homework will be most efficiently answered during established office hours.

Text: Ward, A.D. and S.W. Trimble, Environmental Hydrology, Second Edition, Lewis Publishers, Boca Raton, FL, 1995, 475 p.

Class Website: AGRY 399W has a website on WebCT VISTA. Point your browser to <http://www.purdue.edu/ecourses>; click on the large key that says "Log on to WebCT Vista"; log on using your Purdue University Career Account username and password.

The website will primarily be used to provide copies of class lecture notes, assignments and supplemental readings. Your grades will also be posted on the site. Changes to the syllabus and other announcements will also be posted on the site, so in particular if you miss class, be sure to check the site for any announcements. You will be responsible for

knowing about revised assignments or due dates, regardless of whether or not you missed class on the day the change was announced.

Lecture Notes: Lecture notes in outline form will be provided at the beginning of each unit and will be posted on the class website. The notes should provide a guideline for note taking in class but will not be comprehensive of all material covered in lecture.

Grading, Testing, and Student Evaluation Procedures:

Expectations: It is expected that you will need to spend about nine hours per week outside of class preparing for this three credit course. Some will find that this amount of time is more than adequate and some will find that it is not adequate. The homework and readings have been designed to be accomplished in about that amount of time.

Grading: Your overall grade will be based on the following point distributions. The total number of points is subject to change, but should not be substantially different.

<u>AGRY 399W Grading System</u>		<u>(Approximate Point Distribution)</u>	
Hour exams, two @ 60		120	points
Final Project		105	points
Weekly assignments (8)		120	points
Total		345	points

The lowest homework score for each student will be dropped prior to computing the homework average and the point total will be adjusted accordingly. Course grades will be assigned according to the percent of the total points earned. Students who earn 90% of the total points in the course will be guaranteed to receive an A, 80% a B, 70% a C, 60% a D, and less than 60% an F. The instructor reserves the right to lower the cut off percentages for grades.

Homework Policy:

Assignment Due Dates: All homework assignments (approximately 12; 9 homeworks and 3 project assignments) will be distributed in class and through the course website at least one week before they are due. Assignments will take the form of problem sets, short essays or current events reviews. Partial credit will be given for numerical problems, so all work should be shown. 50% of the total points will be deducted from any numerical answer that does not include appropriate units. All assignments will be collected at the beginning of the class in which they are due; late papers will receive a grade of zero unless a valid excuse is presented.

Honesty Policy: Students may consult with one another regarding completion of the assignments; however each student is expected to turn in his or her own work. All short answers or other written work must be each individual student's own work. Any outside sources used must be properly referenced in accordance with the guidelines in the Publication Manual of the American Psychological Association, Fifth Edition (commonly called the APA style guide). If a student directly quotes another author or source, the

student must cite the material using the format found in the APA style guide. Academic dishonesty (i.e. plagiarism) will result in a zero grade for the assignment, possible failure of the course, and reporting of the incident to the Dean of Students for further action.

Reading Assignments: Reading assignments are listed on the attached sheet. All page numbers refer to the assigned textbook. Any assigned supplemental readings will be posted on the class website. The assignments should be read prior to class.

Exams:

The midterm exams will be based on assigned readings, lesson handouts, homework projects, and material presented in class. They will include problems and short answer questions based on your understanding of the material. The second exam will emphasize material since the previous exam, but may build upon earlier concepts. There will be project presentations during finals week instead of a final exam.

Field Trips: There will be two half-day field trips during the semester, tentatively scheduled for Saturday, February 24th and Saturday, March 24th. The field trips will provide opportunities to see examples of the processes discussed in class and for hands-on experience with different measurement techniques.

Class Schedule and Assignment Sheet

Date	Subject	Readings	Approximate Due Dates
Section 1: Hydrologic Fundamentals			
Jan 8	Introduction	W&T 1.1-1.6	
Jan 10	Watersheds and Water Budgets		
Jan 12	Units and Dimensions		
Jan 15	MLK Jr. Day, No Class		
Jan 17	Precipitation	W&T 2.1-2.7	
Jan 19			Project 1
Jan 22	Solar radiation and energy budgets	W&T 4.5	
Jan 24			
Jan 26	Evapotranspiration	W&T 4.1-4.7	Assignment 1
Jan 29			
Jan 31	Infiltration, soil water and runoff generation	W&T 3.1-3.8, 5.1, 5.2	
Feb 2			Assignment 2
Feb 5			
Feb 7	Hydrogeology	W&T 11.1-11.3	
Feb 9			Assignment 3
Feb 12	Review		
Feb 14	Exam 1		

Section 2: Special Topics			
Feb 16	Lakes and wetlands	W&T 8.6, 10.15	<i>Soils and Water Hand-In</i>
Feb 19			
Feb 21	Cold season processes	W&T 10.7	
Feb 23			Assignment 4
Feb 26			
Feb 28	Watershed delineation		
Mar 2			Assignment 5
Mar 5	Streamflow measurement, characterization and prediction	W&T 5.3-5.8	
Mar 7			
Mar 9			Project 2
Mar 12	Spring Break; No Class		
Mar 14			
Mar 16			
Mar 19	Influence of scale	W&T 6.1 – 6.5	
Mar 21			
Mar 23	Agricultural land drainage	W&T 5.9, 5.10	Assignment 6
Mar 26			
Mar 28	Sediment budgets	W&T 9.1 – 9.11	
Mar 30			Assignment 7
Apr 2	Review		
Apr 4	Quiz 2		
Section 3: Environmental Change			
Apr 6	Urban hydrology	W&T 12.1-12.9	
Apr 9			
Apr 11			
Apr 13	Forest Management	W&T 10.1-10.14	Project 3
Apr 16			
Apr 18			
Apr 20	Climate variability and change		Assignment 8
Apr 23			
Apr 25			
Apr 27	Open		<i>Project Report</i>

The above schedule is subject to change in the event of extenuating circumstances. Any changes will be discussed in class and will be posted on CT Vista for those who are absent. Always check the class website if you are absent from class.