Purdue University
Department of Agronomy

AGRY 399 Environmental Hydrology, Spring 2010
Lilly 3-418, MWF, 1:30 - 2:20 pm; F 2:30 – 4:20 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 river basin 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:** LILY 3-337
Phone: 49-48051 **E-mail**: bowling@purdue.edu
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.

TA: Ms. Bibi Naz **Office:** LILY 3-201
Phone: 49-69522 **E-mail:** bnaz@purdue.edu

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

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.

Class Website: AGRY 399 has a website on Blackboard Vista. Point your browser to http://www.itap.purdue.edu/tlt/blackboard/index.cfm; click on the large key that says "Log on to Blackboard 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.

Grading, Testing, and Student Evaluation Procedures:
Expectations: It is expected that you will need to spend about five 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.

AGRY 399 Grading System	**(Approximate Point Distribution)**
Hour exams, two @ 60	120 points
Final Exam	90 points
Lab Reports (7)	70 points
Lab Quizzes (6)	30 points
Weekly assignments (9)	135 points
Total	**445 points**

The lowest homework or lab report 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.

Exams:
The midterm exams will be based on assigned readings, lesson handouts, homework assignments, 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.

Homework Policy:
Assignment Due Dates: All homework assignments will be distributed in class and through the course website approximately one week before they are due. Assignments will take the form of problem sets, lab reports and hand-ins, 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 be penalized 10% per day 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. For written 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 or paraphrases 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 section 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.

Laboratory Trips: We will have laboratory sessions approximately every other week, to provide opportunities to see examples of the processes discussed in class and for hands-on experience with different measurement techniques, as designated on the schedule below. Unless otherwise noted, the laboratory sessions will involve outdoor field trips and students should come prepared to spend two hours outdoors, even if there is snow and ice.

Class Schedule and Assignment Sheet

Date	**Subject**	**Readings**	**Approximate Due Dates**
Section 1: Hydrologic Fundamentals			
Jan 11	Introduction	W&T 1.1-1.6	
Jan 13	Watersheds and Water Budgets		
Jan 15	Units and Dimensions		
Jan 18	MLK Day; No Class		
Jan 20	Precipitation	W&T 2.1-2.7	Assignment 1
Jan 22	Precipitation measurement **(Lab)**	W&T 2.4, 4.5	
Jan 25	Precipitation	W&T 10.7	
Jan 27			
Jan 29	Soil water	W&T 3.1-3.8, 5.1, 5.2	Lab report 1
Feb 1	Runoff generation and infiltration		Assignment 2
Feb 3			
Feb 5	Snow survey **(Lab)**		
Feb 8	Hydrogeology	W&T 11.1-11.7	Assignment 3
Feb 10			
Feb 12	Evapotranspiration	W&T 4.1-4.7; W&T 10.4	Lab report 2
Feb 15			
Feb 17			Assignment 4
Feb 19	Water in soils **(Lab)**		
Feb 22	Exam 1		

Section 2: Special Topics			
Feb 24	Wetlands	W&T 8.6, 10.15, 12.7,12.8	
Feb 26			Lab report 3
Mar 1	Agricultural land drainage	W&T 5.9, 5.10	
Mar 3			Assignment 5
Mar 5	Agricultural land drainage **(Lab)**		
Mar 8	Watershed properties	W&T 5.3	
Mar 10			Assignment 6
Mar 12	Watershed delineation		Lab report 4
Mar 15	Spring Break; No Class		
Mar 17			
Mar 19			
Mar 22	Streamflow characterization and prediction	W&T 5.4-5.8, 5.11	
Mar 24			
Mar 26	Streamflow measurement **(Lab)**		Assignment 7
Mar 29	Stream processes and scale	W&T 6.1 – 6.5	
Mar 31	Energy budgets	W&T 10.5, 10.7	
Apr 2			Lab report 5
Apr 5			Assignment 8
Apr 7	Exam 2		
Section 3: Environmental Change			
Apr 9	Urban hydrology **(Lab)**	W&T 12.1-12.6	
Apr 12	Urban hydrology		
Apr 14			
Apr 16	Climate variability and change		Lab report 6
Apr 19			
Apr 21			Assignment 9
Apr 23	Forest Management **(Lab)**	W&T 10.1-10.13	
Apr 26	Forest Management		
Apr 28			
Apr 30	AGRY 598 Presentations		Lab report 7

The above schedule is subject to change in the event of extenuating circumstances. In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances. Information regarding changes in this course will be available via the Blackboard Vista web page, email (bowling@purdue.edu), and my office phone: 494-8051.