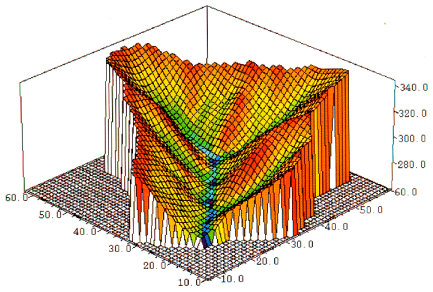
CE 412/512 HYDROLOGY
TR 12:00-13:50

INSTRUCTOR Dr. David Hill
OFFICE 207 Owen
TELEPHONE 541.737.4939
EMAIL dfh@engr.orst.edu
OFFICE HOURS TR 9:00-10:30



TEACHING ASSISTANT Harrison Ko
EMAIL koh@onid.orst.edu
OFFICE HOURS tbd
OFFICE LOCATION tbd

COURSE LEARNING OBJECTIVES

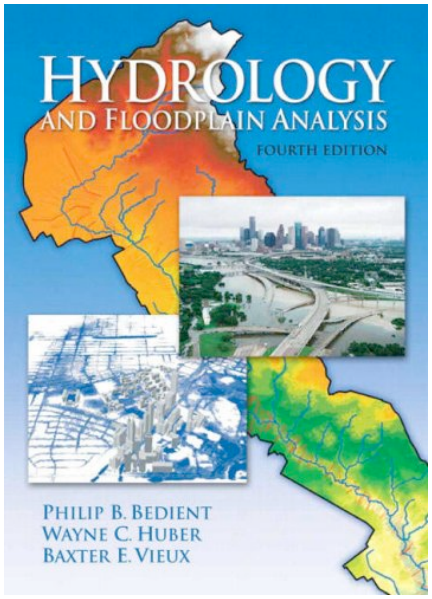
The study of Hydrology is about solving problems to achieve water security for people, based on a sound scientific understanding of hydrologic and hydraulic processes. Water security for people includes protection from excess water and from water shortage, as well as providing sufficient water for a sustainable environment.

At the end of this class you will:

- be aware of the main water resources issues at local, national and global scale,
- be able to qualitatively and quantitatively describe the main processes in the hydrologic cycle, and
- be able to provide solutions for typical water resources problems found in practice.

REQUIRED TEXT

Bedient et al., Hydrology and Floodplain Analysis, 4th edition, Prentice Hall



COURSE DESCRIPTION

This course offers a quantitative introduction to water resources engineering based on a sound background in fluid mechanics applied to understanding hydrologic and hydraulic processes. Hydrologic processes include rainfall, evapotranspiration, infiltration, groundwater flow, surface runoff and routing. This knowledge is applied to the analysis of the natural water-cycle, mass transport, man-made water systems including flood and stormwater control, reservoirs, risk/reliability analysis and investigations into hydrologic extremes (floods and droughts).

GRADING	In-class Participation	10%
	Homework	35%
	Bi-Weekly Quizzes	55%

Letter grades will be based on the weighted average specified above and assigned as follows:

A	= 92-100%
A-	= 90-92%
B+	= 88-90%
B	= 82-88%
B-	= 80-82%
C+	= 78-80%
C	= 70-78%
D	= 60-70%
F	< 60%

I reserve the right to adjust your grades. Your grade will only improve if adjustments are necessary. Feel free to contact me during office hours or by appointment if you have grade-related questions or concerns. Based on the returned homework and quizzes, you should always know what your current grade is!

GUIDED NOTES

Lecture notes are prepared following the idea of guided note-taking. I generate both incomplete and complete versions of the powerpoint lectures used in class. The incomplete versions will be available before class and I will fill them in using a tablet PC during the lectures. All material will be made available via the Oregon State University Blackboard website.

IN CLASS PARTICIPATION

Please bring your textbook, a calculator, and scrap paper to each class. You will periodically be participating in the solution and discussion of in-class example problems. You will work in small groups while solving these problems. Each group will hand in their attempt to solve the problem with each member's name on the paper. Simply attempting the solution will result in full participation credit for the day. However, just writing your name and the problem on a piece of paper is insufficient and will not receive credit.

These in-class exercises will require that you **complete the assigned readings** prior to the beginning of each class.

ON-LINE CLASS PARTICIPATION

All course emails and web postings will be made using the Blackboard course management software. You will need to regularly login (**my.oregonstate.edu**) to check course announcements, download in-class example solutions, and access posted homework solutions.

HOMEWORK

Homework will be assigned regularly and is due at the **beginning of class (before I start teaching!)** on the due date. Late homework **will not** be accepted. If you will be out of town, make arrangements to have a friend turn in your homework for you, or turn it in early directly to me. Feel free to discuss your homework with your fellow students. However, **you have to submit an individual homework! Group submissions will not be accepted.**

Each assignment requires:

- Your name on each page of **stapled** solutions
- A legible and well organized step-by-step presentation (**in pencil**) of the solutions (**include problem diagrams**)
- **Boxed** answers presented with proper units (when applicable)

Assignments not meeting these standards will not be accepted. Solutions will be made available after your assignments have been collected

QUIZZES

This class has no exams. Bi-weekly quizzes will be used to assess your understanding of the course material. Make up quizzes will not be given. In extreme cases (illness, family emergency, etc.), a quiz grade will be replaced by the average of your grades on the remaining quizzes. These situations must be brought to my attention immediately.

The quiz will include questions based on the reading material (Bedient), the in-class lecture discussions as well as the posted lecture notes. **You will not be able to get the maximum number of points without having read the relevant chapters in the text!**

EXTRA CREDIT

This course introduces you to the importance of hydrology and water resources engineering. I will increase your score on each homework assignment by 10% of the maximum number of points if you find examples in newspapers, magazines, or the internet of real-world, current-event, problems where the topics covered in this course play a vital role. Submit a 1-paragraph (150-300 words), well written synopsis that provides (all in your own words, cutting & pasting is plagiarism and NOT acceptable):

- A summary of the problem
- A brief discussion of how the problem relates to this class (what principles covered in class are important in solving the problem?)
- A reference for where you found the story
- A copy of the original source

Attach your paragraph to your homework to receive the extra credit. You can only submit one extra credit paper per homework.

ACADEMIC DISHONESTY

The University's statement on academic dishonesty, which is reproduced below, is available at

http://oregonstate.edu/studentconduct/regulations/index.php

(a) Academic dishonesty is defined as an intentional act of deception in which a student seeks to claim credit for the work or effort of another person or uses unauthorized materials or fabricated information in any academic work;

(b) It includes "cheating" (intentional use or attempted use of unauthorized materials, information, or study aid), "fabrication" (intentional falsification or invention of any information), "assisting in dishonesty" (intentionally or knowingly helping or attempting to help another commit an act of dishonesty), "tampering" (altering or interfering with evaluation instruments and documents), and "plagiarism" (intentionally or knowingly representing the words or ideas of another person as one's own);

Bottom line is this. If you try to pass of someone else's work as your own, that is a serious offense in the eyes of the University and of me. This includes looking at someone else's paper during a quiz, copying someone else's homework solutions, looking at solutions sets (homework / quizzes from previous years) scouring the web for the solutions to homework problems, and so on. The work you present to me should be your best, honest effort.

COURSE SCHEDULE (subject to change)

Week	Date	Time	Topic	Reading	Lecture	Quiz
1	10-Jan	12-12:50	Course Introduction	Notes	1	
	10-Jan	1-1:50	Principles of flow	Notes	2	
	12-Jan	12-12:50	Control volumes and continuity	Notes	3	
	12-Jan	1-1:50	Recitation			
2	17-Jan	12-12:50	Energy equation	Notes	4	
	17-Jan	1-1:50	Hydrologic cycle / precipitation	1.1, 1.2, 1.3, 1.4	5	
	19-Jan	12-12:50	Design storms / limiting storms	6.3	6	
	19-Jan	1-1:50	Recitation / quiz			Quiz 1 (Lectures 1-5)
3	24-Jan	12-12:50	Evaporation / energy balance	1.7	7	
	24-Jan	1-1:50	Evaporation / other methods	1.7	8	
	26-Jan	12-12:50	Infiltration / unsaturated flow	1.8	9	
	26-Jan	1-1:50	Recitation			
4	31-Jan	12-12:50	Infiltration / unsaturated flow	1.9	10	
	31-Jan	1-1:50	Groundwater flow equations	Ch.8	11	
	2-Feb	12-12:50	Steady 1d groundwater flow	Ch.8	12	
	2-Feb	1-1:50	Recitation / Quiz			Quiz 2 (Lectures 6-11)
5	7-Feb	12-12:50	Surface runoff - basins / losses	Ch.2	13	
	7-Feb	1-1:50	Surface runoff continued	Ch.2	14	
	9-Feb	12-12:50	Unit hydrograph	Ch.2	15	
	9-Feb	1-1:50	Recitation			
6	14-Feb	12-12:50	Unit hydrograph / overland flow	Ch.2	16	
	14-Feb	1-1:50	Reservoir routing	Ch.4	17	
	16-Feb	12-12:50	Stream routing	Ch.4	18	
	16-Feb	1-1:50	Recitation / Quiz			Quiz 3 (Lecture 12-17)
7	21-Feb	12-12:50	Hydraulic Routing	Ch.4	19	
	21-Feb	1-1:50	Probability concepts	Ch.3	20	
	23-Feb	12-12:50	Common distributions	Ch.3	21	
	23-Feb	1-1:50	Recitation			
8	28-Feb	12-12:50	Water excess management	Ch.3	22	
	28-Feb	1-1:50	Hydrologic frequency analysis	Ch.3	23	
	1-Mar	12-12:50	Flood frequency analysis		24	
	1-Mar	1-1:50	Recitation / Quiz			Quiz 4 (Lectures 18-23)
9	6-Mar	12-12:50	Flood control	Ch.12	25	
	6-Mar	1-1:50	Flood damage		26	
	8-Mar	12-12:50	TBD		27	
	8-Mar	1-1:50	Recitation			
10	13-Mar	12-12:50	TBD		28	
	13-Mar	1-1:50	Guest Lecture – USACE Staff			
	15-Mar	12-12:50	Cadillac Desert Video			

	15-Mar	1-1:50	Recitation / Quiz			Quiz 5 (Lectures 24-end)