

Virginia Polytechnic Institute and State University
Department of Civil and Environmental Engineering
CEE 4304 – Hydrology
Fall 2009

Catalog Entry:

Precipitation, evaporation, consumptive use, infiltration; stream flow, flood routing; statistical analysis of hydrologic data, flood and drought forecasting, risk analysis, subsurface flow, well hydraulics, introduction to urban drainage design.

Staff:

Instructor

Dr. Glenn E. Moglen
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Office Hours: Tu, 1:45 pm – 3:00 pm
Th, 11:30 am – 12:30 pm
(or by appointment)

Teaching Assistant

Mr. Ryan Doheny
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Mon, 1:30 pm – 2:45 pm
Wed, 1:30 pm – 2:45 pm

Class times:

Lecture: Tuesday/Thursday, 12:30 pm – 1:45pm, (NVC – 103 in Falls Church, 1000 and 1050 Torgersen in Blacksburg)

Web Page:

CEE 4304 - Hydrology (at Scholar)

Video Streaming:

http://www.vbs.vt.edu/content/classes/display_class.php?course_ID=912872009

Texts:

Required:

- McCuen, R.H. Hydrologic Analysis and Design (3rd Edition). Pearson Prentice Hall. 2005. ISBN 0-13-142424-6.

Recommended:

- Chow, V.T., D.R. Maidment, and L.W. Mays. *Applied Hydrology*. McGraw-Hill. 1988. ISBN 0-07-010810-2.
- Matlab – Student Version. The Mathworks, Inc. (any version number is fine).

Tentative Class Schedule:

Date	Topic	Homework Due / Assigned Reading
August 25	Introduction: Class overview, hydrologic cycle, distribution of water in the environment, significant figures	1.0 - 1.2
August 27	Definition of a watershed, delineating watersheds, watershed characteristics	3.0 - 3.6
September 1	Watershed characteristics (continued)	Hwk#1 / 3.0 - 3.6
September 3	Precipitation: frequency concepts, intensity-duration-frequency (IDF) curves, design storm concepts.	4.0 - 4.2, 4.6
September 8	Statistical hydrology: basic concepts	5.0 - 5.4
September 10	Statistical hydrology: Bulletin 17B	Hwk#2 / 5.0 - 5.4
September 15	Statistical hydrology: USGS PeakFQ program	5.0 - 5.4
September 17	“Losses:” Evaporation	14.0 - 14.7
September 22	“Losses:” Infiltration	Hwk#3 / 9.5
September 24	Review for Exam, begin Peak discharges	
September 29	Exam 1	
October 1	Peak discharges: Rational method	7.0 - 7.2, 7.6
October 6	Inlet and culvert design	Hwk#4 / 8.4 - 8.7
October 8	Peak discharges: SCS methods	3.7, 7.7 – 7.8
October 13	Unit Hydrographs: definitions and convolution	9.6
October 15	Unit Hydrographs: derivation from observed data	Hwk#5 / 9.7
October 20	Synthetic Unit Hydrographs: Instantaneous unit hydrographs	9.9
October 22	SCS Tabular Method	(notes)
October 27	Tabular Method automated: VTPSUHM	Hwk#6 (notes)
October 29	Rainfall-Runoff Modeling: HEC-HMS	(notes)
November 3	Exam 2	
November 5	Rainfall-Runoff Modeling: HEC-HMS (continued)	(notes)
November 10	Urban Hydrology: TR-20 Rainfall/Runoff Modeling	Hwk#7 / 9.11 & notes
November 12	Urban Hydrology: Detention basin design	8.8 – 8.9
November 17	Channel Routing	10.0 – 10.9
November 19	Reservoir Routing	Hwk#8 / 11.0 – 11.6
November 24	Thanksgiving Holiday – No class to be held	
November 26	Thanksgiving Holiday – No class to be held	
December 1	Groundwater Hydrology: Fundamental Concepts	6.0 - 6.2
December 3	Groundwater Hydrology: Wells	Hwk#9 / 6.3 - 6.4
December 8	Groundwater Hydrology and Final Review	6.4

Scheduled topics may vary due to time or weather constraints. Due dates are tentative. All readings are from the McCuen textbook unless otherwise noted. Additional notes and other resources from the Web will be made available for many topics.

Homework Policy: May be in the form of problem sets, computer programs, projects, or reports. Late homework *may* be accepted, but at greatly reduced value. **Unless otherwise stated, homework assignments are due *in hard copy at the start of class (12:30pm)* on the day indicated.**

Final Exam: Thursday, December 17, 1:05pm – 3:05pm

Grading Method:

Homework:	25%
Mid-term Exams:	20% (each)
Final Exam:	<u>35%</u>
	100%

Academic Integrity: Please review the University's Honor System (web site: <http://www.honorsystem.vt.edu>) This code applies to CEE 4304. I encourage group work in this class. However, I do not condone copying the work of others. If working as part of a group, I expect you to contribute your proportionate share to the group and to understand all elements of the work completed, not just your part. There will be times during the semester when assigned work is to be completed solely by the individual. During these times you are not to share any work with other students in the class.

Special Needs: If you have a disability that may affect your performance in this class, or if a problem arises during the semester, you should make me aware of this as soon as possible. I will make every effort to accommodate you.

Religious Observances: If your observance of a religious holiday will affect your ability to attend class or complete an assignment on time, please inform me of this with at least a week's advance notice.

My role as a teacher: I will try to lead clear, informative, and interesting discussions on the course topic. I will assign homework/labs/exams that exercise concepts discussed in class and grade/return all materials promptly. I will make every effort to be available to you outside of class during my office hours and by e-mail, however please try to avoid unscheduled visits during non-office hours times. I will treat everyone fairly and with respect.

Your Role as a Student: You are expected to complete and turn in **all** assignments on the date due. Read the relevant class notes **prior** to the class in which they are discussed. Come to class ready to **think**, not just take notes. If something is unclear, please ask questions (in class, by e-mail, during my office hours). **Above all, ask questions.**

If you are experiencing difficulties in keeping up with the academic demands of this course, contact the University Academic Advising Center (web site: <http://www.uaac.vt.edu/success/index.html>). Their educational counselors can help with time management, reading, note-taking, and exam preparation skills.