GEOL4850 (GEOL5850) Groundwater Hydrology

University of North Texas
Department of Geography
Spring 2012
MWF 9:00 AM--9:50 AM, ENV115

Class Web Site: http://www.geog.unt.edu/~fpan/phtml/geol4850_spring2012.html

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Textbook: Fetter C.W., Applied Hydrogeology (Fourth Edition), Prentice Hall, Inc. 2001.
(Textbook web site: http://www.appliedhydrogeology.info/)

General Outline:

1. Introduction
   ---water, hydrology and hydrogeology, hydrologic cycle, hydrologic equation

2. Surface water hydrological processes
   ---precipitation, evaporation, runoff, and stream flow

3. Properties of aquifers
   ---porosity and specific yield, hydraulic conductivity, water table and potentiometric surface maps, aquifer characteristics, homogeneity and isotropy

4. Soil moisture and groundwater recharge
   ---soil moisture, unsaturated flow, infiltration, evapotranspiration and recharge

5. Principles of groundwater flow
   ---hydraulic head, Darcy's law, equations of groundwater flow in confined and unconfined aquifers, hydraulic head gradient, flow lines and flow nets

6. Groundwater flow to wells
   ---computing drawdown caused by a pumping well, determining aquifer parameters from time-drawdown data, slug tests, and specific capacity data

7. Regional groundwater flow
   ---steady regional groundwater flow in unconfined aquifers, transient flow, coastal acquires

8. Water quality and groundwater contamination
   ---mass transport of solutes, groundwater contamination, groundwater restoration

9. Field methods
   ----isotope hydrology, seismic methods, ground penetrating radar, gravity method

Grading: 10% attendance and class participation, 30% homework, 30% midterm, 30% final

Final Exam: The final will be a take-home examination distributed on Wednesday, May 2. It will be due at 5pm on Friday, May 11. Collaboration in any way on the final exam is not allowed and will constitute an honor code violation.

Policy on Late Homework: Homework is due in class on the date specified. Homework turned in up to 1 week late will lose 25% credit, up to 2 weeks will lose 50% credit and after 3 weeks will receive no credit.

Disability Accommodations: The Department of Geography, in cooperation with the Office of Disability Accommodation, complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. Please present your written accommodation request before the 12th class day.

The Student Evaluation of Teaching Effectiveness (SETE) is a requirement for all organized classes at UNT. This short survey will be made available to you at the end of the semester, providing you a chance to comment on how this class is taught. I am very interested in the feedback I get from students, as I work to continually improve my teaching. I consider the SETE to be an important part of your participation in this class.