

## **GEOG4750 (GEOG5750) Surface Water Hydrology**

University of North Texas

Department of Geography

Spring 2015

MW 12:30 pm —1:50 pm, ENV345

**Class Web Site:** [http://www.geog.unt.edu/~fpan/phtml/geog4750\\_spring2015.html](http://www.geog.unt.edu/~fpan/phtml/geog4750_spring2015.html)

**Instructor:** Dr. Feifei Pan

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**Office Hours:** MW 2:00pm-4:00pm or by appointment.

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**Required Text:** Elements of Physical Hydrology by Hornberger, G.M. et al., 2nd edition, Johns Hopkins University Press, 2014

### **References:**

Physical Hydrology by Dingman, Prentice Hall, 2nd edition, 2002.

Handbook of Hydrology, Edited by Madiment, McGraw Hill, 1993.

### **General Outline:**

1. Introduction  
---hydrology, water resources, hydrological cycle, water budget
2. Catchment hydrology: land-atmosphere interactions  
---precipitation, interception and evapotranspiration
3. Principles of fluid dynamics  
---forces on fluids, fluid statics, fluid dynamics, energy loss, laminar and turbulent flows
4. Open channel hydraulics  
---specific energy, discharge measurements, bed roughness, channel flow equations, measuring flow in natural channels
5. Streams and floods  
--- hydrograph, movement of flood waves, flood routing, flood frequency analysis
6. Water in the unsaturated zone  
---forces on water in the unsaturated zone, pressure head and moisture characteristic, Darcy's law, vertical water movement, infiltration, equilibrium profile, field measurements, evapotranspiration from the unsaturated zone
7. Ecohydrology: interactions between hydrological processes and the biota  
--- plant-water relations, waterlogging, hydraulic redistribution, soil moisture control on microbial activity biotic controls on hydrological processes.
8. Hillslope-stream continuum  
--- streamflow hydrographs, hydrograph separation, runoff processes, flow routing, catchment models

**Grading Policy:** 10% attendance and class participation, 30% homework, 30% midterm, and 30% final exam.

**Midterm Exam:** The midterm exam will be an in-class open book test. The date of the test will be announced in class one week prior to the test.

**Final Exam:** The final will be a take-home exam distributed on Wednesday, May 6. It will be due at 5pm on Wednesday, May 13. 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.*