

GEOG4750 (GEOG5750) Surface Water Hydrology

University of North Texas
Department of Geography and the Environment
Fall 2026
TTH 12:45pm-2:05pm, ENV120

Instructor: Dr. Feifei Pan

Office: ENV 210E

Office hours: TTH 9:00 AM - 10:00 AM or by appointment.

Email: feifei.pan@unt.edu

Class Website: Announcements and homework assignments will be posted at the UNT Canvas.

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

References:

Physical Hydrology by Dingman, Waveland Press Inc., 3rd edition, 2015.

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. To encourage student participation, a student will obtain one point if the student answers one question correctly in class. One point is equal to 0.1 actual extra points that will be added to the student's final overall grade. A roll sheet will be circulated during each class.

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

Final Exam: The final exam will be a take-home exam distributed on Tuesday, December 1. It will be due at 5:00 pm on Tuesday, December 8. 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.

Student Academic Integrity: Any collaboration on homework assignments and exams is not allowed. Any violation of the student academic integrity will be reported to the Dean of Students.

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.

SPOT: The Student Perceptions of Teaching (SPOT) 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 SPOT to be an important part of your participation in this class. To increase the participation rate of the SPOT, every student who completes a SPOT and forwards the confirmation email of the completion of the SPOT evaluation to feifei.pan@unt.edu will receive **one actual extra point** toward their final overall grade.

Classroom Guidelines: As a college student, you are considered a responsible adult. Your enrollment indicates acceptance of the University of North Texas college code of student conduct. Please follow these guidelines to avoid disrupting the class:

- (1) Do not arrive late or leave early (except for a bathroom break or emergency).
- (2) Do not sleep or eat during class.
- (3) Do not work on other assignments during class.
- (4) Do not talk when the instructor is lecturing, unless prompted for feedback by the instructor.