

# ENVS 505 Hydrology

## COURSE SYLLABUS

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### Instructor Information

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### Course Description

This Course is designed to familiarize students with all aspects of the hydrologic cycle, but the bulk of the course is devoted to hydrogeology, the study of groundwater. Characteristics of groundwater flow and practical methods of aquifer characterization will be discussed particularly as it relates to the evaluation of groundwater supplies and groundwater contamination and remediation. Pre-requisites: None

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### Course Objectives

- Describe each component of the hydrologic, and explain how each is measured.
  - Describe the methods used to collect data on aquifers and groundwater.
  - Determine from applicable data, the characteristics of any given aquifer.
  - Predict from the characteristics of an aquifer the direction and distance a pollutant might travel within an aquifer.
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### Textbook(s) Required:

Manning, J. C. (1997) Applied Principles of Hydrology, 3rd ed. Upper Saddle River, NJ: Prentice Hall

Optional: (We won't use this one, but if you are going to work much in hydrology, this is a must. But be warned, it's extremely heavy in math:

Fetter, C.W. (2001) Applied Hydrogeology, 4th ed, Upper Saddle River, NJ: Prentice Hall

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**Course Requirements**

1. Complete all reading assignments including reading the lecture notes
  2. Complete the quiz at the end of each unit
  3. Complete all homework assignments --- Some of these, such as drawing groundwater maps, must be done by hand and can not be done on the computer. Once completed, you can either scan them in and submit them as an attachment, or you can snail-mail them to me.
  4. Successfully pass three semester Exams
  5. Complete and submit a ten-page (approximate) research project on some topic of hydrology --- This needs to be an active project rather than just a library/Internet search. Find a hydrology-related topic of local or regional interest, such as a new lake being proposed, a bottling company pumping groundwater, a local water pollution issue, water conservation projects, effects of droughts or floods, groundwater supplies, total maximum daily load of a specific river basin, operation of a specific water treatment or wastewater treatment plant, and like that. Photos and diagrams are encouraged, and your paper needs to be professional looking. This will be due two weeks prior to the end of the semester. Once you have a topic in mind, please let me know in advance before you start work on it.
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**Course Grades** Point Values will be given as follows:

1. Three Exams @ 100 --- 300
2. Homework --- 50
3. Quizzes --- 50
4. Semester Project --- 75

Letter Grades will be assigned as follows:

90% -- 100%	=	A
80% -- 89%	=	B
70% -- 79%	=	C
55% -- 69%	=	D
< 55%	=	F

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**Unit Topics**

Here is the way I think it will go:

Unit 1: The Hydrologic cycle and properties of water (Chapters 1 & 2)

- Unit 2: Evapotranspiration and condensation (Chapters 3 & 6)
  - Unit 3: Precipitation (Chapters 4)
  - Unit 4: Runoff and Streams (Chapter 8)
  - Unit 5: Infiltration (Chapter 5)
  - Unit 6: Darcy's law (of groundwater flow) and Soil seive tests **EXAM I**
  - Unit 7a: Groundwater basics (Chapter 7)
  - Unit 7b: Watertable Contour Maps
  - Unit 8: Well Design
  - Unit 9: Determining drawdown from estimated aquifer characteristics
  - Unit 10: Pump tests
  - Unit 11: Groundwater velocity and practice problems **EXAM II**
  - Unit 12: Water Constituents & Contaminants
  - Unit 14: Groundwater Modeling **FINAL EXAM**
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**Grievance  
Procedures**

Students taking online classes at Texas A&M University-Commerce have the same rights as students enrolled in face-to-face classes. The A&M-Commerce Student Guidebook (page 55) details those rights and explains complaint and grievance procedures, as well as the Student Code of Conduct. Students have the right to appeal course grades, ( see Guidebook page 35), admissions committee decisions, or any adverse action taken by any online faculty against any student. The appeals process is the same for all types of appeals.

The student should attempt to resolve the problem directly with the involved faculty member. If the problem cannot be resolved between the student and the faculty member, the student next seeks assistance from the Department Head. The department head for this course is Jeff\_Kopachena@tamu-commerce.edu

If no satisfactory solution is found, the student may consult with the Dean of the College, who will either assist the student or refer the student to the appropriate administrative person for further assistance.