



ENVS 305 01W Environmental Hydrology

COURSE SYLLABUS: Spring 2024

INSTRUCTOR INFORMATION

Instructor: [Dr. Naima Khan, PhD.](#)

Office Location: [Science Building \(STC\), 233](#)

University Email Address: Naima.Khan@tamuc.edu

[Weekly Meeting time: Tuesday and Thursday 9:00-10:15 AM](#)

COURSE INFORMATION

Materials – Textbooks, Readings, Supplementary Readings

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

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 they relate to the evaluation of groundwater supplies and groundwater contamination and remediation.

Prerequisites: None

Course Objectives

- Describe each component of the hydrologic cycle, 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.

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 in the appropriate submission folder, or you can snail-mail them to me.
4. Successfully pass three semester Exams

Course Grades

Course Grades will be on a weighted system as follows:

1. Three Exams = 80% of course grade
2. Homework = 10% of course grade
3. Quizzes = 10% of course grade

Letter Grades will be assigned as follows:

90% -- 100% = A

80% -- 89% = B

70% -- 79% = C

55% -- 69% = D

< 55% = F

Unit Topics

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 sieve tests EXAM I

Unit 7: Physical Groundwater Models (Chapter 7)

Unit 8: Water table Maps

Unit 9: Well Design

Unit 10: Determining drawdown from estimated aquifer characteristics

Unit 11: Pump tests EXAM II Unit 12: Groundwater velocity and practice problems FINAL EXAM

Student Learning Outcomes

Learning Outcomes:

Critical Thinking: Students will be able to differentiate between fact and opinion; be able to discern between relevant and irrelevant information, recognize bias in source material, and critically examine a diversity of source material.

Communication: In written, oral, and/or visual communication, students will communicate in a manner appropriate to audience and occasion, with an evident message and organizational structure.

Teamwork: Students will be able to work together toward a shared purpose relevant to the course or discipline with a sense of shared responsibility for meeting that purpose.

Empirical and Quantitative Skills: Students will be able understand and utilize mathematical functions and empirical principles and processes. There are calculations on how to measure the water level by wells, atmospheric temperature and pressure gradient, how to calculate the flood intensity by measuring stream cross sectional areas etc.

Instructional Methods

Conducting lectures, resorting to videos and visual-aid presentations, e.g., “PowerPoint” and “You tube”, solving math problems together with the students in the classroom, expecting student participation in the classroom discussions, assigning Exams and homework assignments, etc.

Student Responsibilities or Tips for Success in the Course

Turn-in all the assigned academic work; actively participate in verbal discussions; take notes and copy written explanations during class periods; take assigned written Exams; log into the course website, regularly; complete the assigned weekly study.

Learning strategies

Lectures

Reading assignments to be discussed in class

Analysis of Case Study Samples

Individual work, analysis of free reading Homework

Assumptions, Expectations, Philosophy

University students are a select group of students soon to be professionals.

Instructors can have high expectations of student performance.

Demanding courses benefit students more than easy courses.

Assignments are due on time unless you have made a prior arrangement with me (only granted for unusual or extenuating circumstances and in case of health issues proper medical excuse is required).

Come to class prepared, having read and thought about the assigned readings; course materials are meant to be studied, not merely read. Actively participate in class discussions; ask questions.

In university, a lot of your learning will occur outside of the classroom, during your own research, and in formal and informal interactions with your peers— both here and at meetings, correspondence, etc. Therefore, I expect you to take full advantage of ALL learning opportunities, including seminars and invited speakers.

Reading and assimilating information is a critical part of your current and continuing education. This will help you become a better writer, a more rounded individual, and expose you to subjects outside of your immediate knowledge.

Syllabus Change Policy

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

University Specific Procedures

Student Conduct

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the [Student Guidebook](#).

<http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx>

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum:

<https://www.britannica.com/topic/netiquette>

TAMUC Attendance

For more information about the attendance policy please visit the [Attendance Procedure 13.99.99.R0.01](#).

<http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx>

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf>

Academic Integrity

Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

[Undergraduate Academic Dishonesty 13.99.99.R0.03](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf>

[Graduate Student Academic Dishonesty 13.99.99.R0.10](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf>

Students with Disabilities-- ADA Statement

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services

Texas A&M University-Commerce

Gee Library- Room 132

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

Email: studentdisabilityservices@tamuc.edu

Website: [Office of Student Disability Resources and Services](#)

<http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/>

Nondiscrimination Notice

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

Campus Concealed Carry Statement

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the [Carrying Concealed Handguns On Campus](#) document and/or consult your event organizer.

Web url: <http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M Commerce campuses. Report violations to the University Police Department at 903886-5868 or 9-1-1

AI use in course [Draft 2, May 25, 2023]

Texas A&M University-Commerce acknowledges that there are legitimate uses of Artificial Intelligence, ChatBots, or other software that has the capacity to generate text, or suggest replacements for text beyond individual words, as determined by the instructor of the course.

Any use of such software must be documented. Any undocumented use of such software constitutes an instance of academic dishonesty (plagiarism).

Individual instructors may disallow entirely the use of such software for individual assignments or for the entire course. Students should be aware of such requirements and follow their instructors' guidelines. If no instructions are provided the student should assume that the use of such software is disallowed.

In any case, students are fully responsible for the content of any assignment they submit, regardless of whether they used an AI, in any way. This specifically includes cases in which the AI plagiarized another text or misrepresented sources.

13.99.99.R0.03 Undergraduate Academic Dishonesty

13.99.99.R0.10 Graduate Student Academic Dishonesty

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. 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.