

**The University of Texas at El Paso  
Department of Civil Engineering  
Syllabus**

**COURSE INFORMATION**

CE 4375 - Adv Topics in Civ Engr I: Groundwater Hydrology and Pollution, CRN: 15558  
 CE 4376 - Adv Topics in Civ Engr II: Groundwater Hydrology and Pollution, CRN: 15559  
 CE 4377 - Adv Topics in Civ Engr III: Groundwater Hydrology and Pollution, CRN: 15073  
 CE 5302 - Groundwater Hydrology and Pollution, CRN: 15077

Term: Fall 2023

Delivery Method: In-person

Meeting Day and Time: Tuesdays and Thursdays, 4:30 pm – 5:50 pm

Location: Classroom Building, Room C304

**INSTRUCTOR INFORMATION**

Alex Mayer, Professor

Written Communication: email ([amayer2@utep.edu](mailto:amayer2@utep.edu)) or Blackboard

Phone Number: (915) 747-6942

Office Location: Hudspeth Hall, Room 456

Office Hours:





- Face-to-Face: by appointment only
- Virtual: by appointment only through Zoom or Teams

**COURSE DESCRIPTION**

This course is a general course in groundwater hydrology, emphasizing fundamental principles and their applications to practical problems. Topics included are hydrologic cycles, geologic environments and controls, unsaturated (vadose) and saturated zones, Darcy's law, continuity and energy principles, flow equations, steady and unsteady well hydraulics, aquifer tests, pollutant transport, models, and computer models.

**COURSE OBJECTIVES AND UNIVERSITY LEARNING OUTCOMES**

By the end of the course, students will be able to:

Student Learning Objective	Outcome
Demonstrate the ability to consider different points of view and to work effectively with others to support a shared purpose or goal	 Teamwork Skills
Describe the characteristics of groundwater flow in aquifers. Identify and estimate aquifer properties and their effects on groundwater flow. Calculate groundwater recharge, flow and discharge. Use physics-based equations describing flow in saturated and unsaturated zones, around pumping wells, and contaminant transport and remediation. Decide on appropriate qualitative and quantitative methods commonly used in physical hydrogeology (e.g., piezometric maps, conceptual and numerical models, analytical solutions for groundwater flow and transport, interpretation of pumping tests) Understand fundamentals of groundwater modelling	 Critical Thinking Skills
Prepare memos, reports, and presentations that are concise and accurate	 Communication Skills
Understand the social, economic, political, and cultural complexity of groundwater systems	 Social Responsibility

## **REQUIRED MATERIALS**

Fetter, C.W. and Kreamer, D. 2022. Applied Hydrogeology, 5<sup>th</sup> ed., Waveland Press Inc., Long Grove, Illinois, ISBN 9978-1-4786-4652-5

In addition, a link is provided on the course Blackboard site for a reference book: Freeze, R. A., Cherry, J. A. 1979. Groundwater, Prentice-Hall, Englewood Cliffs, N.J.

## **ASSIGNMENTS AND GRADING**

The basis of grading for this course will consist of the following components with the indicated weights:

Midterm Exam 1	20%
Midterm Exam 2	20%
Final Exam	20%
Homework	40%

This course is a combined upper-level undergraduate and graduate course. All students will have the same assignments, but the assignment of final letter grades will be different. Letter grades for graduate students will be assigned as follows:

A	90 - 100%
B	80 - 89%
C	70 - 79%
D	60 - 69%
F	< 60%

Letter grades will be curved for undergraduate students.

**Homework:** The homework assignments will be assigned and due according to dates posted in the "schedule" page of the Blackboard site or as modified from time to time by the instructor. Problem set and lab assignments will be submitted for grading via Blackboard.

**Problem Set assignments** usually consist of multiple, relatively short calculation problems. Each student will turn in the Problem Sets assignments on their own. The Problem Set assignments that you turn in are intended to represent your own work. I encourage you to work together to understand the problems and to help each other learn the material, but the actual work should be yours alone. Problem Set assignments will be graded based on solution procedure and numerical results.

**Lab assignments** usually consider a single, more in-depth problem with multiple parts. Students will work on the Lab homework assignments in groups and will turn in assignments as groups. Lab assignments will be graded according to rubrics that are available on the course Blackboard site. At the end of the semester, each student will submit a form where you will evaluate the performance of the students in your lab group, including yourself. These peer evaluations will be used to adjust your grades on the lab assignments.

**Exams:** Two midterm exams will be given during class time and a final exam during final exam week. Exam dates are posted in the class schedule and will be announced in class. The exams will cover material from the lectures and homework assignments. You will be given equation sheets, lists of concepts, and sample problems related to each exam in advance of the exams. Exam grading will not be revised beyond one week after the graded exams are handed back. Students are responsible for informing the instructor of any conflict with the exam schedule so that, if possible, alternative dates can be

agreed upon by the class. Makeup exams will only be given in the case of a documented emergency.

### **TECHNOLOGY REQUIREMENTS**

You will need to have access to a computer/laptop. Most of the course content is delivered via the Internet through the Blackboard learning management system. Homework and lab assignments will be submitted for grading via Blackboard. Ensure your UTEP e-mail account is working and that you have access to the Web and a stable web browser. Google Chrome and Mozilla Firefox are the best browsers for Blackboard; other browsers may cause complications. When having technical difficulties, update your browser, clear your cache, or try switching to another browser.

Several times during the semester, I will ask you to bring a laptop so that we can work on computational problems during class.

A few times during the semester, the course content will be delivered via the Internet through Zoom for class lectures. Ensure that your UTEP e-mail account is working and that you have access to the Web and a stable web browser. When having technical difficulties, update your browser, clear your cache, or try switching to another browser. You will need to have access to a computer/laptop, a webcam, and a microphone.

You will need to download or update the following software: Microsoft Office and Adobe Acrobat Reader. Check that your computer hardware and software are up-to-date and able to access all parts of the course. If you do not have word-processing software, you can download Word and other Microsoft Office programs (including Excel, PowerPoint, Outlook and more) for free via UTEP's Microsoft Office Portal. Click the following link for more information about [Microsoft Office 365](#) and follow the instructions.

**IMPORTANT:** If you encounter technical difficulties beyond your scope of troubleshooting, please contact the UTEP [Help Desk](#) as they are trained specifically in assisting with technological needs of students. Please do not contact me for this type of assistance. The Help Desk is much better equipped than I am to assist you!

### **COURSE COMMUNICATION:**

Here are the ways we can keep the communication channels open:

- Office Hours: I have office hours by appointment for your questions and comments about the course. My office hours are in-person or virtual meetings. For virtual meetings, I will send you a Zoom or Teams link.
- Email: UTEP e-mail is the best way to contact me. I will make every attempt to respond to your e-mail within 24 hours of receipt. When e-mailing me, be sure to email from your UTEP student e-mail account and please put the course number in the subject line. In the body of your e-mail, clearly state your question. At the end of your e-mail, be sure to put your first and last name, and your university identification number.
- Announcements: Check the Blackboard announcements frequently for any updates, deadlines, or other important messages.

### **ATTENDANCE AND PARTICIPATION**

Our class meetings are in-person Tuesdays and Thursdays, 4:30 pm – 5:50 pm in Classroom Building, Room C304, beginning August 29 through December 7.

Attendance in the course is determined by participation in the learning activities of the course. Your participation in the course is important not only for your learning and success but also to

create a community of learners. Participation is determined by the completion of the following activities:

- Reading/Viewing all course materials to ensure understanding of assignment requirements
- Participating in engaging discussions with your peers
- Other activities as indicated in the weekly modules

### **ILLNESS PRECAUTIONS**

Please stay home if you have symptoms of a communicable illness. If you are feeling unwell, please let me know as soon as possible, so that we can work on appropriate accommodations.

### **EXCUSED ABSENCES AND/OR COURSE DROP POLICY**

According to UTEP Catalog, “At the discretion of the instructor, a student can be dropped from a course because of excessive absences or lack of effort. A grade of “W” will be assigned before the course drop deadline and a grade of “F” after the course drop deadline.” See Policies and Regulations in the UTEP Undergraduate Catalog for a list of excuse absences. Therefore, if I find that, due to non-performance in the course, you are at risk of failing, I will drop you from the course. I will provide 24 hours advance notice via email.

### **OR**

If you feel that you are unable to complete the course successfully, please let me know and then contact the [Registrar's Office](#) to initiate the drop process. If you do not, you are at risk of receiving an “F” for the course.

### **DEADLINES, LATE WORK, AND ABSENCE POLICY**

Late homework or lab assignments will be penalized 20% per day late. Once a homework or lab assignment has been graded and returned, no further homework will be accepted for that assignment. The instructor may assign a failing grade to any student not turning in 75% of the homework assignments for this course.

### **MAKE-UP WORK**

Make-up work will be given *only* in the case of a *documented* emergency. Note that make-up work may be in a different format than the original work, may require more intensive preparation, and may be graded with penalty points. If you miss an assignment and the reason is not considered excusable, you will receive a zero. It is therefore important to reach out to me—in advance if at all possible—and explain with proper documentation why you missed a given course requirement. Once a deadline has been established for make-up work, no further extensions or exceptions will be granted. There will be no extra credit assignments.

### **ALTERNATIVE MEANS OF SUBMITTING WORK IN CASE OF TECHNICAL ISSUES**

I strongly suggest that you submit your work with plenty of time to spare in the event that you have a technical issue with the course website, network, and/or your computer. I also suggest you save all your work (answers to discussion points, quizzes, exams, and essays) in a separate Word document as a backup. This way, you will have evidence that you completed the work and will not lose credit. If you are experiencing difficulties submitting your work through Blackboard, please contact the UTEP Help Desk. You can email me your backup document as a last resort.

## **INCOMPLETE GRADE POLICY**

Incomplete grades may be requested only in exceptional circumstances after you have completed at least half of the course requirements. Talk to me immediately if you believe an incomplete is warranted. If granted, we will establish a contract of work to be completed with deadlines.

## **ACCOMMODATIONS POLICY**

The University is committed to providing reasonable accommodations and auxiliary services to students, staff, faculty, job applicants, applicants for admissions, and other beneficiaries of University programs, services and activities with documented disabilities in order to provide them with equal opportunities to participate in programs, services, and activities in compliance with sections 503 and 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) of 1990 and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. Reasonable accommodations will be made unless it is determined that doing so would cause undue hardship on the University. Students requesting accommodation based on a disability must register with the UTEP Center for Accommodations and Support Services (CASS). Contact the Center for Accommodations and Support Services at 915-747-5148, email them at [cass@utep.edu](mailto:cass@utep.edu), or apply for accommodations online via the CASS portal.

## **SCHOLASTIC INTEGRITY**

Academic dishonesty is prohibited and is considered a violation of the UTEP Handbook of Operating Procedures. It includes, but is not limited to, cheating, plagiarism, and collusion. Cheating may involve copying from or providing information to another student, possessing unauthorized materials during a test, or falsifying research data on laboratory reports. Plagiarism occurs when someone intentionally or knowingly represents the words or ideas of another as one's own. Collusion involves collaborating with another person to commit any academically dishonest act. Any act of academic dishonesty attempted by a UTEP student is unacceptable and will not be tolerated. All suspected violations of academic integrity at The University of Texas at El Paso must be reported to the [Office of Student Conduct and Conflict Resolution \(OSCCR\)](#) for possible disciplinary action. To learn more, please visit [HOOP: Student Conduct and Discipline](#).

## **GUIDANCE ON ARTIFICIAL INTELLIGENCE**

The use of generative AI tools such as Chat GPT is not permitted in this course. Instances that violate these guidelines will be referred to the Office of Student Conduct and Conflict Resolution.

## **PLAGIARISM DETECTING SOFTWARE**

Students must cite any borrowed content sources to comply with all applicable citation guidelines, copyright law, and avoid plagiarism. Instances that violate these guidelines will be referred to the Office of Student Conduct and Conflict Resolution. Some of your course work and assessments may be submitted to SafeAssign, a plagiarism detecting software. SafeAssign is used to review assignment submissions for originality and will help you learn how to properly attribute sources rather than paraphrase.

## **COURSE RESOURCES:**

UTEP provides a variety of student services and support.

Technology Resources

- [Help Desk](#): Students experiencing technological challenges (email, Blackboard, software, etc.) can submit a ticket to the UTEP Helpdesk for assistance. Contact the Helpdesk via phone, email, chat, website, or in person if on campus.

## Academic Resources

- [UTEP Library](#): Access a wide range of resources including online, full-text access to thousands of journals and eBooks plus reference service and librarian assistance for enrolled students.
- [University Writing Center \(UWC\)](#): Submit papers here for assistance with writing style and formatting, ask a tutor for help and explore other writing resources.
- [Math Tutoring Center \(MaRCS\)](#): Ask a tutor for help and explore other available math resources.
- [History Tutoring Center \(HTC\)](#): Receive assistance with writing history papers, get help from a tutor and explore other history resources.
- [RefWorks](#): A bibliographic citation tool; check out the RefWorks tutorial and Fact Sheet and Quick-Start Guide.
- [The Miner Learning Center](#): Join peer-led study sessions in person or online to review content and discover study strategies in core curriculum courses.
- [UTEP Edge](#): UTEP's cross-campus framework for student success and empowerment – develops students' assets through high-impact experiences made possible by the expertise and dedication of faculty, staff, alumni, and community partners.

## Individual Resources

- [Student Success Help Desk \(SSHD\)](#): Students experiencing challenges or obstacles to academic success including registration, financial, food, housing, and transportation resources may submit a ticket request assistance to [studentsuccess@utep.edu](mailto:studentsuccess@utep.edu)
- [Military Student Success Center](#): Assists personnel in any branch of service to reach their educational goals.
- [Center for Accommodations and Support Services](#): Assists students with ADA-related accommodations for coursework, housing, and internships.
- [Counseling and Psychological Services](#): Provides a variety of counseling services including individual, couples, and group sessions as well as career and disability assessments.
- [UTEP Food Pantry](#): Non-perishable food items are available to students who are currently enrolled in classes. Bring a Miner Gold Card to Memorial Gym, Room 105, Monday through Friday, 10 a.m. to 2 p.m.