This course focuses on the Earth’s water resources, physical and chemical properties of fresh-water, ground-water occurrence and flow. **Course content and activities:** This course introduces the occurrence, movement and quality of fresh water in the water cycle, including environmental problems and possible solutions. Individual on-line research, reviews of research papers and case studies will be required; along with, local in-class field methods exercises and Required participation in the HydroGeology Field Trip, Saturday October 27th.

**Professor:** Stephen L. Shaw, MA, Texas Professional Geoscientist # 1152  
Adjunct Professor of Geology

**Office:** VIN 114  
**Phone:** (432) 638-6101 (cell)  
(325) 942-2242 (Department office)  
**E-mail:** stephen.shaw@angelo.edu

**Office hours:** Tuesday 10-11 am, Thursday: 12:15 – 1:15 pm  
(or contact me to set up a meeting at another time)

**Course Materials:**  
**Text:** C.W. Fetter, Applied Hydrogeology, 4th edition, 2001 (REQUIRED TEXTBOOK)  
**Supplementary Readings:** Papers of interest will be found in a folder on your blackboard webpage. On-line State database sites will also provide research materials and publications for required downloads.

**Grading:**  
There will be 10 in-class and/or out-of-class exercises (typically weekly), which will count for a total of **40%** of the final grade (4% each). There will be one **major field trip** report and one research paper report each **10%** of the final grade. Oral presentation to class of hydrogeology research **5% of final grade to be given during dead week. Student attendance at class and active participation in activities and research are expected.**

Both the midterm and final will include questions from field trips, readings and guest lectures. The exams may include conceptual, short-answer questions and calculations. The final will be cumulative but will focus on the second half of the course. Each exam will count **17.5%** of the final grade.

**Attendance:** Attendance is directly related to success in this course. ASU policy is that "Regular and punctual attendance at all scheduled classes is expected...(ASU OP 10.04 #4)" The policy in this class is that 3 unexcused absences are allowed, but if a Student is absent more than 3 times, a deduction of 5% will be made from the Student’s final grade in the course for each absence.

Late penalties for homework and papers will be **10%** per day if unexcused. Overall grades will be as follows: 89.5 and above = A; 79.5–89.5 = B; 69.5–79.5 = C; 59.5–69.5 = D; below 59.5 = F; curving is possible but not guaranteed.
Each student will schedule a brief individual meeting with Professor Shaw after Mid-Term Exam!

http://blackboard.angelo.edu contains lecture slides, answers to lab assignments and class projects, practice problems, web links to scenic areas mentioned in class and lab, and your official grades.

**Required Lab and Field Equipment**

1. Geology field book – ruler - pencils
2. Hand lens (10x) and grain-size template
3. Camera and scale to include in photos

**Student Learning Objectives and Outcomes**

1) To understand techniques used in the field of Hydrology/Hydrogeology. Some problem-solving techniques that you will learn and practice:
   a. Field applications of hydrology: surface water
   b. Field applications of hydrogeology: water from wells and hydrochemistry
   c. Researching topics of hydrology/hydrogeology, including introduction to State and Federal publications and databases
   d. Quantifying water flow and discharge using mathematics
   e. Applying Darcy’s Law of flow
   f. Independent research (defined topics and methods)
   g. Carefully defending your thinking when answering questions.

2) To learn the practical and theoretical applications of surface hydrology and subsurface hydrogeology.

3) Learn about the water resources of Texas, and public policy as related to water supply and contamination issues.

Learning outcomes will be evaluated and grades will be assessed on Exams, field learning and research reports.

**Cell Phones and Other Electronic Devices**

Please keep all electronic devices on vibrate or on silence. The use of electronic functionality on your device, that is not authorized by the instructor during a test may result in the forfeiture of your grade for that test.

**Field Trip**

You are required to attend the hydro-geology field trip. The field trip project will be a research/lab assignment. Schedule: 7am to 7pm, Saturday October 27th.

**Geology, History, Water Resources of the Southern High Plains and Northern Edwards Plateau, Texas.** Trip leaves from and returns ASU campus, traveling to Midland and back in one day.
<table>
<thead>
<tr>
<th>Week - 2018</th>
<th>Lecture/Discussion topics</th>
<th>Research Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>I 8/28, 8/30</td>
<td>Introduction; origin of water on Earth, water cycle and properties of water</td>
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<tr>
<td>Monday 9/3/2018 = Labor Day</td>
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<tr>
<td>III 9/11, 9/13</td>
<td>Plant water use and precipitation</td>
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<tr>
<td>IV 9/18, 9/20</td>
<td>Infiltration and soil water/ Limnology Fetter (2001) Chapter 6</td>
<td>(I will be in Montana Sat, 9/22 &amp; next week)</td>
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<tr>
<td>V 9/25, 9/27</td>
<td>Guest Lectures and in-class Field assignments</td>
<td></td>
</tr>
<tr>
<td>VI 10/2, 10/4</td>
<td>Watershed delineation and fluvial geomorphology Fetter (2001) Chapter 7</td>
<td>Last day to Drop = 12th Class Day.</td>
</tr>
<tr>
<td>VII 10/9, 10/11</td>
<td>Streamflow and runoff, Flooding and drought Fetter (2001) Chapter 2</td>
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<tr>
<td>VIII 10/16, 10/18</td>
<td>Review for Mid-Term = SLS 10/16/2018, Midterm Exam</td>
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</tr>
<tr>
<td>XV 12/7, 12/10, 12/11</td>
<td>Friday - Research papers Due, 12/7/2018 Monday &amp; Tuesday – Student Presentations and Final Exam review</td>
<td></td>
</tr>
<tr>
<td>XVI 12/11 (tentative date)</td>
<td>FINAL EXAM (comprehensive)</td>
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</tbody>
</table>
Join GEO and AAPG!

One of your most rewarding responsibilities as a Geoscience major or minor is the chance to participate in activities of GEO, our organization of geology students at ASU, and a student chapter of the American Association of Petroleum Geologists (AAPG), an international professional organization. GEO has supper meetings Wednesdays at 7:00 in VIN 139. The last Wednesday of the month we meet together with the San Angelo Geological Society (SGS) and host a significant geology talk by an outside speaker. GEO dues are $15.00 / semester. AAPG student membership is free! To join AAPG fill out membership application at www.aapg.org

Notes

1. Weekly exercise project results submitted after the due date will receive a 10-point deduction!

2. Work turned in after graded work is returned to others will not be graded. (These are professional ethics issues)

CLASS PREPARATION ASU EMAIL: Since class announcements will be routinely distributed via email and Blackboard, you will need to regularly check your ASU email account and our course Blackboard site (daily). All course correspondence will be through your ASU email account and Blackboard. ASU provides Internet and email services to you at any of the computer labs on campus. Call 942-2911 to set this up if necessary.

KNOW THE ASU HONOR CODE: Angelo State University expects its students to maintain complete honesty and integrity in their academic pursuits. Students are responsible for understanding the Academic Honor Code, which is contained in both print and web versions of the Student Handbook.

STUDENTS WITH DISABILITIES: ASU is committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs or activities of the university, or be subjected to discrimination by the university, as provided by the Americans with Disabilities Act of 1990 (ADA), the Americans with Disabilities Act Amendments of 2008 (ADAAA), and subsequent legislation. The Office of Student Affairs is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability, and it is the student’s responsibility to initiate such a request by contacting: Ms. Dallas A. Swafford, Director of Student Disability Service, 325-942-2047, dallas.swafford@angelo.edu, Houston Harte University Center.

TITLE IX: Angelo State University is committed to the safety and security of all students. If you or someone you know experience sexual harassment, sexual assault, domestic or dating violence, stalking, or discrimination, you may contact ASU’s Title IX Coordinator: Michelle Nicole Boone, J.D., Director of Title IX Compliance, 325-486-6357, michelle.boone@angelo.edu, Mayer Administration Building 204A

INCOMPLETE GRADE POLICY: It is policy that incomplete grades be reserved for student illness or personal misfortune. Please contact faculty if you have serious illness or a personal misfortune that would keep you from completing course work. Documentation may be required. See ASU Operating Policy 10.11 Grading Procedures for more information.

STUDENT ABSENCE FOR OBSERVANCE OF RELIGIOUS HOLY DAYS: A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. See ASU Operating Policy 10.19 Student Absence for Observance of Religious Holy Day for more information.
ACADEMIC INTEGRITY: Students are expected to maintain complete honesty and integrity in all work. Any student found guilty of any form of dishonesty in academic work is subject to disciplinary action and possible expulsion from ASU. The College of Science and Engineering adheres to the Statement of Academic Integrity.

PLAGIARISM: Plagiarism is a serious topic covered in ASU’s Academic Integrity policy in the Student Handbook. Plagiarism is the action or practice of taking someone else’s work, idea, etc., and passing it off as one’s own. Plagiarism is literary theft. In your discussions and/or your papers, it is unacceptable to copy word-for-word without quotation marks and the source of the quotation. It is expected that you will summarize or paraphrase ideas giving appropriate credit to the source both in the body of your paper and the reference list. Papers are subject to be evaluated for originality via Turnitin. Resources to help you understand this policy better are available at the ASU Writing Center.

COPYRIGHT POLICY: Students officially enrolled in this course should make only one printed copy of the given articles and/or chapters. You are expressly prohibited from distributing or reproducing any portion of course readings in printed or electronic form without written permission from the copyright holders or publishers.

GENERAL POLICIES RELATED TO THIS COURSE: All students are required to follow the policies and procedures presented in these documents:

- Angelo State University Student Handbook
- Angelo State University Catalog

Figure 6-1. Conceptual model of the Edwards-Trinity (Plateau) and Pecos Valley aquifers and Hill Country part of the Trinity Aquifer.