

Water Resources

GEO 3434, Fall 2016

Instructor: Dr. Jason Julian
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Office Hours: T & R 1:50–2:50 pm, or by appointment

Lecture: TR 12:30 – 1:50 pm in ELA 311
Lab: ELA 121: M 10:00-11:50 am, T 3:30-5:20 pm, or R 3:30-5:20

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Office Hours: M 12:00-1:30pm & T 10:00-11:30am, or by appointment

Philosophy of the Course: Water is one of the most important and most disputed resources across the globe, and affects everybody's daily lives. This critical role is a result of the fact that water sustains virtually all life, supports almost all economic activities, and is one of the most valuable and desirable aesthetic resources. In this course, we will study the science, management, socioeconomics, and politics of water resources from a geographical perspective. Given the importance of water resources and the fact that a working knowledge of water resources is required for many professional positions, this will be a rigorous course that will provide you with professional-level experience in water resources. You will get your feet wet (literally and figuratively) by measuring hydrology, accessing and analyzing water resources data, and producing professional reports on these analyses.

Catalog Description: This course analyzes within a geographical perspective the formation, use, conservation and management of water resources. Students will develop a working knowledge of the hydrologic, water quality, legal, economic, political and societal factors that determine water availability, hazards, use, demand and allocation. Prerequisite: GEO [2410](#) or equivalent with a grade of "C" or higher.

Student Goals and Objectives

- Understand the major concepts, processes, realms, and applications related to water resources.
- Acquire experience in accessing and interpreting hydrological data.
- Apply this in-depth knowledge of hydrology and water resources to solve a series of problems associated with the science, management, socioeconomics, and politics of water.
- Improve report writing skills.

Required Texts (additional readings will be provided by Instructor):

- Cech, T., 2010, *Principles of Water Resources: History, Development, Management, & Policy*. **The 3rd edition is the recommended edition and the one used by the instructor; however, the 2nd edition is also acceptable.
- Sansom, Andrew, 2008, *Water in Texas: An Introduction*.

Course Work Requirements

Course Participation – 20%

Course participation measures how much of an active interest you take in the course and includes in-class assignments/quizzes and keeping up to date on water resources issues. There will be approximately 8 unannounced in-class assignments/quizzes, each worth 1-2 points (totaling 10% of your overall grade). Make sure you bring at least one sheet of paper every class for these assignments. Keeping up to date on water resource issues requires you to find and post relevant media weekly, for at least 10 weeks of the semester. I have set up a closed group within the Texas State University group on Facebook: “**Water Resources for Bobcats**”. Because it is a closed group, you will have to ask permission to join, which I will grant. Once you are in the group, you are expected to post at least one water resources related story/link/photo/event every week for at least 10 weeks of the semester (1 point for each posting). Duplicate postings will not count. Therefore, you are responsible for looking at all postings, which will prevent you from posting something that has already been posted. For every week less than 10 that you do not make an original posting, one point will be deducted from your course participation grade. Postings from previous classes can serve as examples of what I expect. Because this is a closed group (including my other water resources courses), only members within the group will see your postings, so feel free to be creative in your postings and comments. Since this is an “.edu” group, no friend requests are needed to join the group, which means your personal profiles will be protected as you see fit. All that is required to be in the Texas State University group is that you create a profile with an XX@txstate.edu email address and join “Groups at Texas State” first. You can set up a dummy profile if you choose, but make sure your name is recognizable by your Lab Instructor, who will be keeping track of your posts for your grade. This Facebook group is my preferred method of sharing water resource topics with the class because it is easy to use, convenient, can easily be linked to a wide variety of sources, and can use multi-media. However, if you do not want to use Facebook, you can email your Lab Instructor your weekly postings, which he or she will then post to the group.

Attendance – 5%

You are required to attend all lecture and lab sessions. After two unexcused absences, each additional unexcused absence will result in one point deducted from your overall grade, up to a maximum of 5 pts. Attendance will be monitored by a sign-in sheet passed around at the beginning of class. You are responsible for signing in. If you do not sign-in, you will be counted as absent.

Exams – 25%

The midterm exam (worth 10 pts) will be multiple choice and short answer format. The date of the **midterm will be Thursday, Oct 13**. All material (including readings, lectures, in-class assignments, videos, and labs) covered up to this date is fair game for the midterm. The final exam (worth 15 pts) will also be multiple choice and short answer format, and will be cumulative. That is, all material (including readings, lectures, in-class assignments, videos, and labs) covered in the course is fair game for the final exam. The date of the **final exam will be Thursday, Dec 15 @ 11:00 am in ELA 311**. On both exams, some of the short answer questions will require hydrologic calculations covered in class. Make-up exams will only be permitted for significant, verifiable reasons that are described in the *Texas State Student Handbook*. Make-up exams can consist of essay and/or mathematical calculation questions.

Lab Projects – 50%

In order to provide you with “hands on” experience in water resources, you will work on a diverse set of exercises during labs that are intended to provide you with realistic professional experience in water resources. There will be 6 projects, each worth between 5 and 15 points. Some projects will combine multiple lab exercises. You may work alone or in 2-person groups. It is **your** responsibility to choose your teammate and work out a schedule for the two of you to complete the assignments. Each member of the team is expected to contribute equally to the project. You will receive detailed instructions and assistance on these projects in the lab portion of the class, but you are also expected to spend a considerable amount of your own time on these assignments. All of the projects require a working knowledge of *Microsoft Excel*. The Lab Instructor(s) will help you gain this working knowledge, but if you need extra help, the Student Learning Assistance Center (SLAC) at Alkek Library is a great resource. No project may be resubmitted for a new grade. All projects are to be typed, neat, and presented in an attractive, professional manner following the current format used by the *Journal of the American Water Resources Association*. Points will be deducted for work that does not meet this standard. For your reports, use a 12 pt. font size. All tables and figures should have a title and caption.

Grading: Your grade in the course will be determined by how many points you accrue out of the total possible 100 points. The final letter grades will be assigned as follows: A = 90-100, B = 80-89, C = 70-79, D = 60-69, F = <60. The points are allocated as follows:

Course Participation	20 points
Attendance	5 points
Lab Projects	50 points
Midterm Exam	10 points
<u>Final exam</u>	<u>15 points</u>
TOTAL	100 points

The lab instructor(s) will be responsible for all grading. If you have a question about your grade, contact them first. If the issue is unresolved, then contact me.

Late Assignments: Late work will be accepted but there will be a grade penalty that increases with each day past the due date.

Extra credit: There will be several opportunities for extra credit in the course. More details will be provided on the first day of class and throughout the semester. Maximum amount of extra credit allowed is 5 points and all extra credit assignments are due by **Dec 5**.

Course Policies

Attendance Policy: You are required to attend all lecture and lab sessions. Further, attendance is 5% of your overall grade (see guidelines above). You are responsible for all materials and announcements made in class. If absent, make sure you check the lecture on TRACS for announcements you missed in class.

Electronic Devices: Electronic devices such as laptops and tablets are allowed in class as long as they are being used for taking notes. **Smartphones are not allowed unless you can demonstrate to me the need for it.** If you are caught using electronic devices for any other

reason, then you will forfeit your right to use electronic devices in class for the rest of the semester. These other reasons include, but are not limited to, social networking, texting, email, and viewing non-GEO 3434 material. If I find that your electronic device is distracting or prevents you from paying attention in class, I will ask you to refrain from its use. If you are using a laptop, please sit in the back row of class so that you do not distract other students. If you are expecting an emergency announcement from an immediate family member, please notify me before class of that situation.

Learning Outcomes: The Department of Geography's Student Learning Outcomes for all departmental programs may be reviewed at: <http://www.geo.txstate.edu/about/apr.html>.

Texas State University Honor Code (<http://www.txstate.edu/effective/upps/upps-07-10-01.html>)

*Learning and teaching take place best in an atmosphere of intellectual fair-minded openness. All members of the academic community are responsible for supporting freedom and openness through rigorous personal standards of honesty and fairness. Plagiarism and other forms of academic dishonesty undermine the very purpose of the university and diminish the value of an education. Specific sanctions for academic dishonesty are outlined in **Texas State Student Handbook**.*

Students with Special Needs/Disabilities: If you have a condition that requires special accommodation (as documented by the Office of Disability Services) in order to successfully complete the course, you must notify the Office of Disability Services (located at LBJ 5-5.1; ph. 512.245.3451) **AND the instructor** in a written memo (or email) before the end of the second week of classes. Failure to do so may result in the necessary accommodations not being made. *Texas State University San Marcos is dedicated to providing these students with necessary academic adjustments and auxiliary aids to facilitate their participation and performance in the classroom* (<http://www.txstate.edu/effective/upps/upps-07-11-01.html>).

Academic Testing for Students with Disabilities (<http://www.txstate.edu/trec/attd/accessAtsdTS.html>).

Students who are approved for testing accommodations have the option of using Academic Testing for Students with Disabilities (ATSD) office to take in-class tests or quizzes with their accommodations. Any student who schedules a test(s) with ATSD must schedule tests during the in-class scheduled test time (or seek an exception from the instructor) and are expected to take the test at ATSD. If a student schedules to take test with ATSD but decides that they will take the test in the classroom, the student will be responsible for notifying the ATSD and the instructor prior to the class start time.

Professionalism: Our society considers a "professional" as a person who is responsible for the quality, integrity, and implications of his/her work. In the Department of Geography, we consider our students to be "professionals in training." Course requirements are intended to bring the conduct and the quality of work of students in our programs up to professional standards. Students are responsible for attending class on time, reading the assignments, and completing the assigned projects on time in an aesthetic and thorough manner. We assume that students are aware of, and practice common courtesy and the consideration of others that are necessary for a civil society and that are expected of professional persons. For additional information on Texas State University policy on student conduct, we encourage you to consult the university Policy and Procedures Statement on: Courteous Behavior, Classroom Civility, Classroom Disruption, Suspension from Class and Sexual Harassment.

<http://www.provost.txstate.edu/pps/policy-and-procedure-statements/4-teaching/pps4-02.html>.

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COURSE TOPICS AND TENTATIVE SCHEDULE

Date	Topic	<u>Readings (before class)</u>
Aug 29	Lab Project 1: Watershed Definition & Characteristics (Due Sep 29; 10 pts), meet in ELA 121 – (Map Library tour)	
Aug 30	Intro to Water Resources; Cadillac Desert – Part 1	
Sep 1	Historical Perspectives	<u>Cech Preface & Ch 1; Sansom Foreword & Ch 1</u>
Sep 5	NO LABS – Work independently on Lab Project 1	
Sep 6	Hydrologic Cycle	<u>Cech Ch 2</u>
Sep 8	Hydrometeorology	<u>Sansom Ch 2</u>
Sep 12	Lab Project 1: Watershed Definition & Characteristics	
Sep 13	Surface Water Hydrology – Part 1	<u>Cech Ch 3; Sansom Ch 3</u>
Sep 15	Cadillac Desert – Part 2	
Sep 15	Geography Welcome Back Picnic – Sewell Park	
Sep 19	Lab Project 1: Watershed Definition & Characteristics	
Sep 20	Surface Water Hydrology – Part 2	
Sep 22	Coastal Hydrology & Resources	<u>Sansom Ch 4</u>
Sep 23	Bamberger Ranch Field Trip (Extra Credit)	
Sep 26	Lab 2a: San Marcos River Ex—meet at river below Salt Grass (2 pts)	
Sep 27	Groundwater Hydrology	<u>Cech Ch 4</u>
Sep 29	Channel Roughness; Water Quality	<u>Cech Ch 5; Sansom Ch 9</u>
Oct 3	Lab 2b: San Marcos River calculations (Due by end of lab; 3 pts)	
Oct 4	Water Quality – continued	
Oct 6	Urban Water Resources	<u>Cech Ch 6; Sansom Ch 5 & 8</u>
Oct 10	Lab 3: Aquarena Center Ex--meet at Meadows Center (5 pts)	
Oct 11	Hydrology Synthesis and Exam Review	
Oct 13	Midterm Exam	
Oct 17	Lab Project 4: Floods & Drought (Due Nov 7; 10 pts)	
Oct 18	Agricultural Water Resources	
Oct 20	NO Lecture (work on Lab 4 as a group); Lab does meet	
Oct 24	Lab Project 4: Floods & Drought	
Oct 25	Dams	<u>Cech Ch 7</u>
Oct 27	Water Law – Part 1	<u>Cech Ch 8; Sansom Ch 6; Kaiser 1986</u>
Oct 31	Lab Project 4: Floods & Drought	
Nov 1	Water Law – Part 2	

Nov 3	Water and Politics	<u>Cech Ch 9 & 10</u>
Nov 7	Lab 5: GIS watershed boundary derivation (5 pts)	
Nov 8	Water and Economics	<u>Cech Ch 13; Sansom Ch 10</u>
Nov 10	Cadillac Desert – Part 3	
Nov 14	Lab Project 6: Water Resources Planning (Due Dec 8; 15 pts)	
Nov 15	Aquatic Ecosystems – Part 1	<u>Cech Ch 12; Sansom Ch 7</u>
Nov 17	Aquatic Ecosystems – Part 2	<u>Sansom Ch 11</u>
Nov 21	NO LABS this week	
Nov 22	NO CLASS – Work on Lab Project 6 as a group	
Nov 24	NO CLASS - THANKSGIVING	
Nov 28	Lab Project 6: Water Resources Planning	
Nov 29	Cadillac Desert – Part 4	
Dec 1	River Restoration	
Dec 5	Lab Project 6: Water Resources Planning – <u>MUST ATTEND LAB; Last day for extra credit</u>	
Dec 6	Ecosystem Services	
Dec 8	Course/Exam Review	
Dec 15, Thursday	FINAL EXAM (Comprehensive) 11:00am – 1:30 pm	