



Geography 3290 & 5290

Water in Utah

Spring 2016 Syllabus & Course Detail

Water, water, water.... There is no shortage of water in the desert but exactly the right amount , a perfect ratio of water to rock, water to sand, insuring that wide free open, generous spacing among plants and animals, homes and towns and cities, which makes the arid West so different from any other part of the nation. There is no lack of water here unless you try to establish a city where no city should be.

-- EDWARD ABBEY, *Desert Solitaire: A Season in the Wilderness*

Professor: Dr Kathleen Nicoll Email: kathleen.nicoll@gmail.com

Office Hours during the regular term: Tuesday and Thursday , after class meetings (**announcements advise of any changes). Meetings may be arranged by appointment.

Required Lectures: BLDG 73 Room 106 - Section 1: T, H 3:40 -5 pm. Attendance and participation is required.

Required Readings: Links to online readings and other materials are online the course blog at <http://waterinutah.wordpress.com> The book *Cadillac Desert* is required reading. Additional references about specific topics will be provided.

Requirements: You will need library research skills and basic internet fluency to access the online course resources and the web. You will need internet access to do some assignments. There are no prerequisite courses for this class, but students are expected to be geographically literate. A map of important waterways and reservoirs in Utah will be provided to students for reference; we will have a quiz on this. Students will do assignments, attend an all day field trip 11/5/2016, write essays on the readings, submit a paper about a research project, prepare a short blog entry that will be posted online, and make a presentation to the class (25 minutes).

Introduction to this Course

In the late 1990s, surveys demonstrated that the average person in the Greater Wasatch Front of Utah used 319 gallons of water per day. Since then, personal water consumption has been cut by 25%, saving trillions of gallons per year. However, Utah is the 2nd driest state, and presently has the highest per capita rate of water consumption in the USA. This class will examine the technical foundations of hydrology in Utah, as well as resource and issue-specific topics in both the physical and social science realms.

Input from the class participants will define the topical coverage and specific learning outcomes of the class. We will discuss the possible topics during the first class meeting. The course outline of topical coverage and readings is attached and may be modified as the class progresses.

Structure & Purpose of Lectures, Readings and Assignments:

Your focused study and participation in the class is important. Two lecture periods are scheduled for each week; attendance is essential and may be recorded. Students may not sign any attendance sheet on behalf of others. Students who miss 3 lectures without an excuse will not be successful; do not skip class, or slack off so that failure can happen!! Lectures, readings and assignments complement and reinforce each other. Lectures provide the structure of the course, discussion of key issues, and a forum for reference of additional material. The content of the lectures will be at the discretion of the professor or other presenters, and will not simply recap the suggested readings. Student should take notes during the lectures in notebooks – NOT LAPTOPS.

Occasional guest appearances by other faculty members, podcasts, videos, online modules, or exercises may occasionally be assigned; students are expected to learn material covered.

Many of the readings in this class are in the popular press. This class will also expose students to the primary scientific literature in our general topic of hydrology. Careful and critical reading of assigned materials, articles or datasets is important. Students should aim to finish the suggested readings in advance of our meeting.

Students may expect weekly readings and assignments that provide practice with methods, concepts and topics introduced in the lectures and readings. The assignments will vary throughout the semester and will be announced each week. Some of these will require internet access or use of a basic calculator.

Each student will turn in an original research paper on an approved related topic, deliver a summary presentation to the class by powerpoint, and provide a short write-up on the topic for the class blog. The specifics of the paper will be discussed and expectations will be communicated. Graduate students will be held to a different standard than undergraduates.

One Saturday Field Trip will be held on 10/29/2016. Students who do not attend cannot make it up. Details will be announced. The trip will be held from 8 am-6 pm, or thereafter, departing from and returning to a parking lot locale at the U. Attending students must download and sign forms whether or not they attend the field trip.

The purpose of the field trip is to better familiarize you with our landscape (and to provide a chance to enjoy the outdoors). The day-long field trip will be held on 10/29/2016. Field Trip attendance IS MANDATORY, and participants will find it helpful. There will not be a make-up field trip opportunity. More details will be announced. Those attending should plan on spending ALL day from 8 am until 6 pm on the trip, and should bring your own pack lunch and water/drinks). We will likely be outside in full sun for much of the time, so make sure to come prepared – bring sunglasses, wear good sunscreen and a sunhat. There will be some walking involved, but there are ****not**** demanding amounts of difficult hiking required on the course. Please wear reliable footwear (sneakers, boots, or other closed shoes) and full-length trousers (i.e., not shorts). Recommendations: sunglasses, day pack, watch, chapstick, extra snacks, more water than you think you will want... camera, notebook, pens, clipboard.

Grading and Policies thereof

The responsibility for turning in materials on time, and earning a grade is placed squarely on the shoulders of the students taking this course. Course grades will be determined by how much material each student can show they have learned, as follows:

Research Paper 300 points

Presentation to class 200 points

Blog write-up 100 points

Participation worth 100 points

Homework, Field Trip Participation & Quizzes worth 400 points total

`Total 1100 points

****The Professor may decide to (but is not obligated to) drop the lowest quiz score on the above for those students who are regularly attending the class lecture.**

Any students taking the course at the 5000 level will be held to a higher standard.

Materials turned in late may be docked, and may take extra time to grade.

Students with special needs as defined by the university must consult with the Center for Disabilities early in the semester to arrange accommodations such as extra exam time.

Adherence to the University and department policies apply in all cases, as does a modicum of jurisprudence. Adherence to the general code of honor is expected on the part of students, even if the exercises involve a take-home format. Students may only represent themselves in the context of their work, and must attribute sources without plagiarizing. Students may not consult supporting materials during the administration of exams, tests or quizzes. Students in attendance must not write on themselves or on their clothing or personal effects that could be consulted to facilitate their performance. Sunglasses, hats and/or caps may not be worn while any student in this class is taking an exam or quiz. Students may not and must not allow others to copy their work. Students are advised that the University has firm policies about instructional offences; they are not tolerated under any circumstances. Penalties are severe. In general, instructional offences involve some form of deceit or trickery, such as plagiarism or copying. This form of offence involves the use and passing off the work of someone else (including other students) as one's own, without giving credit to another. Students must do their own work!

Participation. Students should participate in lecture and discussions! Points will be based on attendance, in-class exercises, homework assignments, and participation during the scheduled lecture meetings, discussions and debates. Attendance at class lectures is squarely the responsibility of the student; any proxy attendance or online versions of related lecture notes do not stand alone. For most students, success in this course will require regular attendance, attention to the reading and lecture, taking notes for review, studying materials, writing a sound research paper, and delivering a related presentation. Attendance allows the opportunity to ask questions, and hear other students' questions answered. Questions and discussion are welcome. We may have some planned topical debates during the semester.

If students have problems understanding the material, or would like to discuss their grades, they should arrange to see the Professor immediately.

Any in-class quizzes and other exercises are *impromptu* and shall not normally be offered to those who are not present. If extenuating circumstances exist, these may be documented in writing, for consideration by the Professor. Do not expect to be absent from class and to do well. You will not be able to make-up missed work if you are absent without an excuse that fits criteria defined by the University policies.



Extra credit is not offered. Please do not ask for extra credit.

Students are expected to abide by suitable classroom conduct policies; the lecture period is meant to foster learning, and students should cooperate toward that goal. The Professor shall reserve the right to preserve the integrity of the classroom as such; disruptive students may be asked to leave. Please respect the integrity of this learning environment.

Policies on appealing grades follow those prescribed by the University and the department. First and foremost, students are encouraged to discuss their grades and related matters during office hours or another scheduled time period with the Professor. Students may raise any concerns or problems with the course material, lectures, exam questions, in person, or in writing.

Students who feel they are not performing to the grade they would wish to earn are encouraged to evaluate their study strategies, and consult with the Professor for further individual advice. Improvement will be considered as evidence of student effort. Any student who seems to be failing or otherwise struggling may be called in to meet with the Professor. This call-in consultation is mainly to touch base, and should not be viewed with hostility by the student; simply put, the Professor wishes to express concern, and does not wish anyone to fail.

Students wishing for more support should consult with the Professor. Also the U has excellent counselors who can assist you - appointments may be made 801-581-6826.

Student athletes, EMTs, military personnel etc are expected to provide copies of their schedule well in advance of anticipated planned absences in which they are ****officially**** on active service. Student athletes should afford the classroom and the Professor the same courtesy they would extend to their coach/employer/commander.

Please note that the University has an official policy on absences that are deemed acceptable in lieu of class attendance. For example, Greek activities, vacations, or work schedules are not included in the official absences allowed by the University. As a general rule, the students must be prepared to take an active role in their own decision-making and planning in regards to attendance, and the Professor is not expected to flow around the students' choices, unless there are exceptional mitigating circumstances. If a student decides to attend their friend's wedding instead of the scheduled class, for example, they should turn in their assignments on time, and ensure their own arrangements for another person to take notes on their behalf.

Upon their attendance at the third lecture, students signing the attendance sheet are indicating that they have read and understand the course policies outlined, and that they agree to all policies and procedures. Modifications to this document and to rules may be made by the instructor(s).

Announcements will be made at each lecture to update all students enrolled in the course. Further details will be announced regarding online resources. **TAKE YOUR OWN NOTES - LECTURE NOTES WILL NOT BE POSTED ONLINE.**

Considering a major or a minor in Geography? Great! We are happy to discuss the details with you. You can consult with a peer advisor, schedule an appointment to see the department advisor, MaryAnn Golightly. See our department website for more information. Or attend meetings of our Geography Club!

Attendance policy The University and this professor expect regular attendance at all class meetings. This syllabus is official communication in writing passed out during the

first class meeting. Students are responsible for acquainting themselves with and satisfying the entire range of academic objectives and requirements as defined by the instructor. PPM, Policy 6-100III-O

Equal Access Statement The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Union Building, 581-5020 (V/TDD). CDS will work with you and instructors to make arrangements for accommodations. All written information in the course can be made available in alternative format with prior notification to CDS.

Addressing Sexual Misconduct Title IX makes it clear that violence and harassment based on sex and gender, which includes sexual orientation and gender identity/expression, is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted on the basis of your sex, including sexual orientation or gender identity/expression, you are encouraged to report it to the University's Title IX Coordinator; Director, Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or to the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to police, contact the Department of Public Safety, 801-585-2677(COPS). Call for additional information regarding reporting and victim support.

Attention student veterans: the U of Utah has a Veterans Support Center on campus, in Room 161 in the Olpin Union Building. Hours: M-F 8-5pm. Please visit their website for more information about what support they offer, a list of ongoing events and links to outside resources: <http://veteranscenter.utah.edu> Please also let me know if you need any additional support in this class for any reason.

Attention all students, and in particular those members of the LGBTQ community: my classroom is a safe zone*. Additionally, please know that the U of Utah has a Resource Center on campus in Room 409 in the Olpin Union Building. Hours: M-F 8-5pm. You can visit their website: <http://lgbt.utah.edu> Please advise if there is support you need.

If English is your second language, please be aware of several resources on campus that will support you with your language development and writing. These resources include: the Department of Linguistics ESL Program (<http://linguistics.utah.edu/esl-program/> (Links to an external site.)); the Writing Center (<http://writingcenter.utah.edu/> (Links to an external site.)); the Writing Program (<http://writing-program.utah.edu/> (Links to an external site.)); the English Language Institute (<http://continue.utah.edu/eli/> (Links to an external site.)). Please note that access to translators and dictionaries is not permitted during the exams. Students may not consult notes, texts, papers, calculators, papers, written materials, or each other during exams

NO other FINAL EXAM IS HELD FOR THIS CLASS, unless by popular request.

Course Schedule of Topics Covered -- 2016

** links to online readings and related resources will be placed on our class blog.

Week	Date 2016	Description of Topic Covered
1	T, 8/23	Intro to Course; Meet & Greet. Syllabus handout.
	H, 8/25	Fundamental Concepts, social themes
2	T, 8/30	Hydrologic Cycle & Precipitation in Utah -- Assignment - visualization
	H, 9/1	Soil Moisture, Drought –
3	T, 9/6	Climate Visualization -- Assignment – Liquid Desert video
	H, 9/8	Intro to Watersheds, e.g. Lake Powell Pipeline - Advise Prof of topic
4	T, 9/13	Surface Water -- Guided Hydrograph & Gauging exercise
	H, 9/15	Rivers in Utah -- Quiz on major Rivers, Reservoirs & Dams of Utah
5	T, 9/20	River landscapes
	H, 9/22	Floods (and Droughts)
6	T, 9/27	The Great Salt Lake // Arid basins -- Project Outline is due
	H, 9/29	Springs, Groundwater & Aquifers
7	T, 10/4	Weathering & Erosion →Karst
	H, 10/6	“ Catch UP
8	10/14 - 16	** NO CLASS -- Happy Fall Break
9	T, 10/18	Snow & Ice – Glaciers, Avalanches
	H, 10/20	Cadillac Desert Discussion – Blog contents are due
10	T, 10/25	Agriculture – the case of alfalfa & almonds - First draft papers are due
	H, 10/27	Biota – Evapotranspiration
	Sa, 10/29	ALL DAY SATURDAY FIELD TRIP 10/29
11	T, 11/1	Pollution, Politics, The Law, Philosophies and Ideals. More Cadillac
	H, 11/3	Water Quality & Pollution
12	T, 11/8	** NO CLASS LECTURE – PLEASE VOTE
	H, 11/10	Urbanization & Industrialization Effects -- Hydrograph Interpretation Exercise
13	T, 11/15	Green Design, Mitigation, Stormwater capture
	H, 11/17	Class Presentations
14	T, 11/22	Class Presentations
	H, 11/24	** NO CLASS -- Thanksgiving Break – say hello to your family.
15	T, 11/29	Class Presentations
	H, 12/1	Class Presentations
16	T, 12/6	Class Presentations
	H, 12/8	Final class -- All materials must be turned in by 5 pm.

...Note: there is *not* a cumulative final offered during the finals week. All students will do an independent and original research project that culminates in a paper and presentation about a thematic topic that relates to Water in Utah. Your project will contain a literature in addition to new investigation or analysis of data. Yes, this can be based on your own field work or on the analysis of existing databases (USGS, NWS, NOAA). Some possible research Paper Topics

- Famous Floods in Utah, like the City Creek Flood
- Coastal Management Issues in Utah
- Utah's impaired waterways
- Stormwater management in Utah, or on Campus
- Fisheries status – presentation by specific waterway or in general
- Case Studies of adaptive management approaches in Utah
- Waste Management Approaches, pollution, Superfund Sites.
- Aquaculture, fisheries
- Case Studies in Bioretention, Reforestation of riparian buffers, etc
- Ecotoilets and personal waste
- Wetlands restoration examples, like the Jordan River
- Legal Eagles: regulatory/non-regulatory frameworks in Utah
- Soil erosion and agriculture
- Xeriscaping and other conservation practices
- Water treatment issues in Utah
- Utah's population pressure in the next decades and water resource availability
- Snowpack hydrology; Industry issues
- Wetlands (Who cares?), Duck Hunting.
- Weather-Lake feedbacks
- Irrigation trade-offs & pollution of drinking water sources
- Dams. Should they all go away?
- Aquifer piracy – Snake River. Well water issues.
- Water recreation and tourism.
- Pollutants, like mercury, selenium and other metals.
- Our saline lake and its economy.
- How biota relate to watersheds.
- Ancient glacial legacies in Utah.
- WeHow does Utah society value water resources?
- Economics of water.
- Colorado River, the Compact, and its myriad issues.
- Water Parks -- and preserving areas as parks for Barks. Dog-free zones?
- Water Quality versus Quantity. Is Drinking water “pure.”???
- Water reclamation – grey water industries.
- Incentive-based management strategies for water conservation
- Politics of preservation and conservation
- Forecasting floods, drought etc