

**Draft Syllabus 10/14/16**  
**TEXAS WATER POLICY**

*A Spring Semester 2017 course, PA388K (unique# 61465)*

Course meetings: Monday afternoons from 13:30-15:30: class lecture and discussion from 15:30 to 18:30: field study visits every other week; during intervening weeks, the option of apprenticeships.

Apprenticeships: 2 hours every other week, or as mutually agreed upon, with a organization concerned with water management; to be arranged once class begins

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**COURSE OBJECTIVES**

The purpose of this course is to introduce graduate students to water resources in the context of Texas' efforts to manage its surface and groundwater quantity and quality. As the class will be offered during Spring 2017 when the Texas Legislature is in session, class members will take advantage of opportunities to learn about water issues, experience water politics in practice, and well as observe water infrastructure and management in the field. A person completing this course will:

- \* Understand the sources and uses of water in Texas, as well as the laws, regulations, planning and financing practices employed to allocate surface and groundwater among users;
- \* Be familiar with the technologies that allow Texas to obtain, move, distribute, treat, reuse and dispose of water and wastewaters as well as the laws, regulations and planning practices employed to manage water use and quality assurance;
- \* Learn about Texas coastal zone, estuarine, and in-stream ecological resources and management of those water resources and ecological communities, and
- \* Be comfortable with using administrative, legislative, judicial, and public outreach processes to address water policy issues and conflicts.

There will be three parallel components of this course: in-class instruction; field study; and legislative /agency/policy participation. Each student will be expected to develop a water policy-related proposal/paper/evaluation to improve water management. A student will have flexibility to propose what she/he wishes as a course paper deliverable. The class product must be related to policy or it must seek to accomplish something in the real world. The deliverable could report on some water policy issue or develop a recommendation for some water policy changes. It could evaluate the consequences of a proposed piece of legislation. There are many options, limited only by a student's creativity.

Students will spend Mondays from 13:30 to 15:30 in class. Table 1 lists class topics. This

course introduces graduate students to a series of Texas water management issues, including: sources and uses of water; water data sources and acquisition methods; quantity issues associated with surface, groundwater and reused water; watershed management for rivers, lakes and estuaries; water quality management of surface and ground waters; water storage in dams, reservoirs, aquifers or impoundments; drinking water treatment and distribution; wastewater collection and treatment; water planning and finance in Texas; the role of federal, state, regional and local institutions in water management and water conflicts; transboundary water management between Texas and other US states and Mexico; management of extreme water events, such as droughts, floods, climate change and emergency preparedness.

**Table 1: Class Topics, Texas Water Policy**

<b>Week</b>	<b>Content</b>
Week 1	No class: Martin Luther King Day
Week 2	Sources and uses of water in Texas and the world
Week 3	Water data in Texas: from where, how collected; how available
Week 4	Models for water sector management
Week 5	Surface water policy: quantity and use
Week 6	Groundwater policy: quantity and use
Week 7	Watershed management: catchments, river, streams, lakes; dams, reservoirs and impoundments; instream flows
Week 8	Wetlands in Texas: wetlands, farm ponds; estuaries and coastal zones
Week 9	No class: Spring Break
Week 10	Water quality management: point sources; steady-state non-point sources; non-steady state non-point sources, runoff management
Week 11	Drinking water treatment: production, distribution, use, and quality Assurance; desalination
Week 12	Wastewater treatment: sources, collection, treatment, disposal, reuse, and quality assurance
Week 13	Water conflicts: legislative, administrative, and judicial processes; management of water conflicts; trans-boundary water management
Week 14	Water planning and finance: water planning processes for surface and groundwater; financial support for water and wastewater infrastructure development
Week 15	Water and emergency preparedness: droughts, floods, climate change
Week 16	Future of water in Texas

### **Course Resources**

Readings and videos for each week's will be available in the final course syllabus. There will be occasional guest speakers to comment in detail on some elements.

### **Student Deliverables**

Grades will reflect class participation, including regular attendance in field visits and affiliations, and a major paper. Each student is responsible for developing a 'policy paper' for the course that seeks to develop or document ideas that could improve water management in Texas. Options could include: proposing a piece of legislation; assessing the consequences of an existing piece of legislation; evaluating a proposed water investment or technology; use of a water management model to assess potential investments; and many other options. The paper cannot be a theoretical or library-based; it must deal with real and current water management issues in Texas

Every two weeks, beginning with the first class day, students will spend two hours outside of class in field observation, comparable to a “lab session.” Table 2 lists possible field visit sites.

**Table 2: Field Visit Sites**

- *Irrigation technology*: observing conventional and advanced technology for increasing irrigation efficiency, re-use of tailing water, and reducing discharges from irrigation
- *Groundwater*: visit to a stream segment where surface water percolates into the ground and a spring site where groundwater bubbles up from an aquifer
- *Green technology for pollution prevention*: observing ‘green technology’ to prevent pollution from rainfall runoff
- *Drinking water treatment*: observe a municipal drinking water treatment plant
- *Primary and secondary wastewater treatment*: observe a municipal wastewater treatment plant and laboratory
- *Tertiary groundwater treatment and residuals*: observe a tertiary treatment site which re-uses sewage sludge
- *Extreme event water management*: observe a dam and two control centers that monitor, manage, and mitigate flood and hurricane consequences

Students will have an option of affiliating with a water management agency or legislative committee for the semester, to develop some understanding of how Texas water policy is developed and implemented. Such an affiliation is an option but not a class requirement. A list of possible affiliation organizations will be provided on the first day of class. Arrangements will have been made in advance for an assignment and a mentor in each institution.