



SAINT LOUIS UNIVERSITY
MADRID

EAS 1310: Water: Our Precious Resources
Fall 2017

Class Days and Time: T-Th 9:30-10:45

Classroom: SIH-C

Prerequisite(s): None

Credit(s): 3

Instructor: Monica Perez-Bedmar

Instructor's Email: monica.perezbedmar.1@slu.edu

Instructor's Campus Phone: 91 554 58 58, ext. 266

Office: PRH, Science Office, First Floor

Office Hours: W 16:30.17:30

Course Description: Water is essential to life as we know it. It shapes our planet on every level, from the chemical properties of the H₂O molecule to its central role in global climate. Water is considered the most scarce and vulnerable resource on earth, and therefore it has been identified as the XXI century's oil. Where do we find it? Is it safe to consume? Who has access to it? How can we manage this precious resource to provide an adequate supply to all the species that depend upon it?

This course is focused on freshwater, which is one of most important and vulnerable resources on Earth. Availability of freshwater for human consumption, animal husbandry, and crop irrigation will become a major focus of national and international relations in the years to come. In this course, we will be learning the basics about freshwater resources, drinking-water and waste-water treatments, water-borne disease, water pollution, river dynamics and flooding, land use in flood plains, and national and international conflicts related to water resources.

Course Goals and Student Learning Outcomes: - To have students understand the origins of water resources, the cycles that water resources undergo, the uses and misuses of water, and the main water conflicts the earth is facing.

At the end of the course, students will:

- Gain an understanding of the origin of water and the way it circulates throughout the different earth systems.
- Gain an understanding of the cause and effect relationship between human activities and water quality/quantity problems.
- Gain an understanding of water management issues at the local, regional and national levels, including the complexity resulting from multiple viewpoints of the issues;
- Engage in critical thinking about issues and concepts related to water policy, management and planning;

Saint Louis University - Madrid Campus is committed to excellent and innovative educational practices. In order to maintain quality academic offerings and to conform to relevant accreditation requirements, the Campus regularly assesses its teaching, services, and programs for evidence of student learning outcomes achievement. For this purpose anonymized representative examples of student work from all courses and programs is kept on file, such as assignments, papers, exams, portfolios, and results from student surveys, focus groups, and reflective exercises. *Thus, copies of student work for this course, including written assignments, in-class exercises, and exams may be kept on file for institutional research, assessment and accreditation purposes.* If students prefer that Saint Louis University - Madrid Campus does not keep their work on file, they need to communicate their decision in writing to the professor.

Required Texts and Materials: Reading texts and materials will be posted on Blackboard. Please make sure that you are able to access Blackboard.

Attendance Policy:

1. Students are encouraged to participate in class discussions and to ask questions.
2. Announcements may be made during the semester.
3. Syllabus, reading and articles are subject to change.
4. Students are responsible for the lecture material, handouts, homework and assigned reading.
5. It is mandatory to attend all classes unless a reasonable excuse is given.
6. Make up exams are not given. Students who legitimately miss an exam, due to a doctor's visit or family emergency must provide written documentation of the circumstances. A letter from the university counselor is accepted. Exams that are missed illegitimately result in a score of F. Grades for these students will be based on the remaining exams. Missing more than one exam results in an F grade.

Course Requirements and Grading Rationale/System:

The grade will be obtained from the following areas:

- Mid-term I: 20%
- Mid- term II: 20%
- Final: 20 %
- Group presentation: 10%
- Field trip reports: 15%
- Article reviews: 10%
- Attendance, class participation: 5%

Group Project-

Students, working in groups of three, will be required to examine a water resources issue in-depth and provide a written and oral interpretative review of the topic. The goal of this assignment is to examine how natural resources management requires more than just an understanding of the science of the resource. Managing water resources issues usually involves politics, economics, public health, and more intangible factors such as aesthetics, historical importance, tradition, and community pride. A list of possible projects will be provided, but groups may choose an alternative research topic – newspapers and websites are great sources of current water resources issues. Your topic must be approved - I will review your project outline and let you know if your topic is appropriate. The product of this assignment will be:

- A project paper that includes a summary of the background information, an analysis of all sides of the issue and recommendations for resolving the problem or issue;
- A complete list of citations that includes personal interviewees;
- Two to three questions based on the presentation for possible inclusion in the final exam.
- A presentation to the class with the use of appropriate audio visual aids

You will be graded on your understanding of the issue, as reflected by your background information, the depth of interview(s) with experts/stakeholders, and your analysis of the issue.

Grading Scales from Exams

A	93-100%
A-	90-92.9%
B+	87-89.9%
B	83-86.9%
B-	80-82.9%
C+	77-79.9%
C	73-76.9%
C-	70-72.9%
D	60-69.9%
F	0-59.9%

E-mail: Campus and course announcements will often be handled by e-mail. Students should check their "@slu.edu" e-mail regularly.

University Statement on Academic Integrity: Academic integrity is honest, truthful and responsible conduct in all academic endeavors. The mission of Saint Louis University is "the pursuit of truth for the greater glory of God and for the service of humanity." Accordingly, all acts of falsehood demean and compromise the corporate endeavors of teaching, research, health care and community service via which SLU embodies its mission. The University strives to prepare students for lives of personal and professional integrity, and therefore regards all breaches of academic integrity as matters of serious concern.

The governing University-level Academic Integrity Policy can be accessed on the Provost's Office [website](#). Additionally, SLU-Madrid has posted its academic integrity policy online: <http://www.slu.edu/madrid/academics>. As a member of the University community, you are expected to know and abide by these policies, which detail definitions of violations, processes for reporting violations, sanctions and appeals.

The professor will review these matters during the first weeks of the term. Please direct questions about any facet of academic integrity to your faculty, the chair of the department of your academic program or the Academic Dean of the Madrid Campus.

University Title IX Statement: Saint Louis University and its faculty are committed to supporting our students and seeking an environment that is free of bias, discrimination, and harassment. If you have encountered any form of sexual misconduct (e.g. sexual assault, sexual harassment, stalking, domestic or dating violence), we encourage you to report this to the University. If you speak with a faculty member about an incident of misconduct, that faculty member must notify SLU's Title IX deputy coordinator, Marta Maruri, whose office is located on the ground floor of Padre Rubio Hall, Avenida del Valle, 28 (mmaruri@slu.edu; 915-54-5858, ext. 213) and share the basic fact of your experience with her. The Title IX deputy coordinator will then be available to assist you in understanding all of your options and in connecting you with all possible resources on and off campus.

If you wish to speak with a confidential source, you may contact the counselors at the SLU-Madrid's Counseling Services on the third floor of San Ignacio Hall (counselingcenter-madrid@slu.edu; 915-54-5858, ext. 230) or Sinews Multiplettherapy Institute, the off-campus provider of counseling services for SLU-Madrid (www.sinews.es; 917-00-1979). To view SLU-Madrid's sexual misconduct policy and for resources, please visit the following web address:<http://www.slu.edu/Documents/Madrid/campus-life/SLUMadridSexualMisconductPolicy.pdf>.

Students with Special Needs: In recognition that people learn in a variety of ways and that learning is influenced by multiple factors (e.g., prior experience, study skills, learning disability), resources to support student success are available on campus. Students who think they might benefit from these resources can find out more about:

- Course-level support (e.g., faculty member, departmental resources, etc.) by asking your course instructor.
- University-level support (e.g., tutoring/writing services, Disability Services) by visiting the Academic Dean's Office (San Ignacio Hall) or by going to <https://www.slu.edu/madrid/academics/student-resources>.

Students with a documented disability who wish to request academic accommodations must contact Disability Services to discuss accommodation requests and eligibility requirements. Once successfully registered, the student also must notify the course instructor that they wish to access accommodations in the course. Please contact Disability Services at disabilityservices-madrid@slu.edu or +915 54 58 58, ext. 230 for an appointment. Confidentiality will be observed in all inquiries. Once approved, information about the student's eligibility for academic accommodations will be shared with course instructors via email from Disability Services. For more information about academic accommodations, see "Student Resources" on the SLU-Madrid webpage.

Note: Students who do not have a documented disability but who think they may have one are encouraged to contact Disability Services.

Mandatory Trips/Activities:

A mandatory one-day visit will take students to Spain's most important wetlands in the heart of the Peninsula, Tablas de Daimiel and Laguna de Riduera. These two ecological and historical places, will aid students in the

comprehension of the historical uses of water, the consequences of mismanagement on vital ecosystems, and the international and national initiatives to recover these wetlands in the heart of the Peninsula.

Students enrolled in this class must participate and make payment for all mandatory trips/activities. The prices posted on the web are approximate; and the final price will be based on the number of students enrolled on the last day of the Add/Drop period. All students, including those who withdraw from the class after this date, are required to pay these fees, which are non-refundable, unless the trip is cancelled due to low enrollment. Please review SLU-Madrid's trip policies, available on-line.

Fall 2017 Course Schedule:

Monday, September 4	
Tuesday, September 5	Introduction: What is Water? Where did it originate? Where does it come from? How much water is there? Covering over 70 percent of Earth's surface, water is central to the movement of matter and energy on Earth. Only 3% is fresh, and only one percent of that is available to us in aquifers, lakes, rivers, streams, and wetlands. Origins of water, how water circulates through Earth systems and is distributed across the planet.
Thursday, September 7	A History of Water Use: Review of civilizations use of water, first needs for water, usage patterns varying across nations and regions, how humans move and store water, first use in irrigation.
Tuesday, September 12	What is water made of? What characteristics does this composition confer on it? Molecular structure of water, colligative properties, characteristics that make it the universal solvent and the ideal medium for life.
Thursday, September 14	Where does water come from? Amount of water on earth: Possible sources of water: outer space, inner planet. Fresh vs salt water. Hydrological cycle.
Sunday, September 17	Last Day to Drop a Class Without a Grade of W and /or Add a Class, choose Audit (AU) or Satisfactory/Unsatisfactory (S/U) Options
Tuesday, September 19	Surface Water Hydrology Overview: Influences of the atmosphere and of land and vegetation on stream flow; temporal and spatial variability of stream flow, with separate chapters on floods and on low flow and hydrologic drought; snow and ice, the frozen components of the hydrosphere.
Thursday, September 21	Ground Water Hydrology Overview: Physical properties that affect groundwater. Soil types, infiltration, aeration, percolation, aquifers and reservoirs. Unconfined and confined aquifers. Quantity of groundwater.
Tuesday, September 26	Rivers and watersheds: How water shapes wetland, freshwater, and marine communities. different kinds of freshwater systems and the services they provide, from mangrove forests that protect coastlines to watersheds that purify water and mitigate. Runoff, Erosion, Stream Flow.
Thursday, September 28	Water, Fish and Wildlife: Climate, landscape shape (topology), geology and the movement and abundance of water help to determine the plants and animals that inhabit each wetland. The complex, dynamic relationships among the organisms inhabiting the wetland environment are called food webs.
Tuesday, October 3	Field trip to Tablas de Daimiel and Lagunas de Riduera.

Thursday, October 5	Wetlands: from wastelands to vital ecosystems: Definition of marsh, bog, or peatland and how different species have adapted to these highly variable ecosystems, their key role in the water cycle, and their biological productivity; wetland loss; its effects, both local and global; and mitigation and prevention strategies.
Tuesday, October 10	Review for Midterm I, 1 st set of articles due
Thursday, October 12	Fall Break
Friday, October 13	
Saturday, October 14	
Sunday, October 15	
Tuesday, October 17	
Thursday, October 19	Climate Change: Fact or fiction? Historical trends. Measurements of climate change. Consequences and solutions. Influence in water circulation and availability.
Tuesday, October 24	Water Quality Overview: Parameters to identify water quality, pristine vs environmental conditions, setting standards of water quality on human health, and the feedback within an environment between healthy non-human species and healthy people. Midterm Grades Due.
Thursday, October 26	Nature of Surface Water and Ground Water Pollution: Topics include waterborne diseases, water treatment, water pollution, sewage treatment, techniques to identify and remedy threats to watershed and drinking water quality.
Monday, October 30	Last Day to Drop a Class and Receive the Grade of W.
Tuesday, October 31	Irrigation, Desalination and Wastewater Treatment: Human impact on freshwater resources – including the balancing of competing demands on those resources, the nature of water governance, the implications of water as a privatized commodity, and technologies to increase supply and use water more efficiently, like desalination and reuse.
Wednesday, November 1	University Closed
Thursday, November 2	Surface and Ground Water Development and Management, Water Treatment Processes Residential Water Resources Management and Onsite Wastewater Treatment. Field trip water management of City of Madrid. Spring Registration Opens!
Tuesday, November 7	Review Midterm II, 2 nd set of articles due
Thursday, November 9	University Closed
Tuesday, November 14	Midterm II
Thursday, November 16	Introduction to Water Rights: Examine the biophysical, social and economic dimensions of watershed management, understand how water scarcity affects human health, ecosystems, agriculture, and urban settlements, explore the ramifications of public versus private ownership of water services.
Tuesday, November 21	Agricultural Water Management: Quality, and scarcity of this finite resource, and the social, economic, and political aspects of managing water supplies. We discuss the sources and uses of freshwater – including its finite nature, the effect of water scarcity on ecosystems and human populations as well as the industrial and agricultural uses of water.
Thursday, November 23	Emerging Water Issues, Regional, US, World Wide: the environmental, policy, and socio-economic factors that affect water management on a global level. Topics include climate change (including its relationship to water resources; ecosystems and biodiversity; melting ice and rising sea levels; and weather) as well as best practices (including water resource policy, management and conservation).

Tuesday, November 28	Water Conservation Programs Overview of the Safe Drinking Water Act and Groundwater Management Programs: trans-boundary management of shared water resources is so challenging, especially in the developing world. Expectations, understand the ramifications of climate change on the world's freshwater resources, examine the environmental, political, and socio-economic factors that affect water management on a global level.
Thursday, November 30	Water Use Conflict Resolution: A review on different international conflicts, resolution problems, and effectiveness. Examples in developed and developing countries.
Tuesday, December 5	Group presentations
Wednesday, December 6	University Closed
Thursday, December 7	Group presentations
Friday, December 8	University Closed
Tuesday, December 12	Review for final and 3rd set of articles due
Thursday, December 14	Final Exam – Day 1
Friday, December 15	Final Exam – Day 2
Monday, December 18	Final Exam – Day 3 Midyear Commencement!
Tuesday, December 19	FINAL EXAM
Wednesday, December 20	Final Exam – Day 5
Saturday, December 23	Grades Due to Registrar

FALL 2017 FINAL EXAM SCHEDULE

	14 Dec (Th)	15 Dec (Fr)	18 Dec (Mn)	19 Dec (Tu)	20 Dec (Wd)
08:30-11:30	Mn classes that meet at 9:00 & 9:30	Mn classes that meet at 10:00	Mn classes that meet at 11:00 & 11:30	Tu classes that meet at 9:30 & 10:00	Tu classes that meet at 8:00
12:00-15:00	Tu classes that meet at 11:00	Mn classes that meet at 13:00	Tu classes that meet at 14:30	Mn classes that meet at 12:00	Tu classes that meet at 12:30
15:30-18:30	Mn classes that meet at 14:30	Tu classes that meet at 17:00 & 17:30	Mn classes that meet at 16:00	Tu classes that meet at 15:30 & 16:00	Mn classes that meet at 17:30
19:00-22:00	---	---	Mn classes that meet at 19:00	Tu classes that meet at 19:00	---