ENVE 140 Water Resources Management

Syllabus Spring 2019

Tuesday and Thursday 1330 to 1445 Final Exam: May 17, 2019 1130-1430

Granite Pass 145

Instructor: Professor Josué Medellín-Azuara (jmedellin-azuara@ucmerced.edu) Office: 214 SE1

Office Hours: 1600 to 1730 Tuesdays unless otherwise noted, by appointment, and as announced

Course Description: Introduction to water resources planning and management, with an emphasis on California water problems. Water planning theory will form the basis for exploring applied analytical and quantitative methods in the field, including systems analysis, risk assessment, and geospatial modeling. A design project will focus on solving contemporary water management problems.

Prerequisites: ENVE/ESS 110; *waived with consent from instructor*

Course Goals: This course will introduce students to contemporary water resources problems and provide students with analytical techniques for analyzing and understanding water problems and their potential solutions.

Course Learning Outcomes:

Upon completion of this course, students will be able to:

1) Explain contemporary water problems in California;

2) Perform systems analyses on specified water problems, and interpret hydrologic and geospatial models;

3) Estimate the potential impact of engineering solutions through risk assessments; and

4) Design an engineering solution for contemporary water management problems.

Water resources management as applied in the California context requires:

a) the knowledge and application of mathematics, science, and engineering;
b) an ability to design and analytically evaluate water resource systems, components, or processes to meet desired societal objectives within realistic economic, environmental, and social constraints;
c) an ability to communicate effectively in often contentious situations with deeply held beliefs;
d) an understanding of the impact of water resource and environmental engineering solutions in a global, economic, environmental, and societal context;
e) as well as knowledge of contemporary water resource issues, broadly encompassing surface water and ground water quantity and quality.

Course Requirements and Grading

General Policies:

- Modern society is deadline driven and there are no make-ups or do-overs or baby-bounces. As such, make-up exams will not be scheduled unless due to extreme hardship and as prior approved by instructor. Late assignments receive one-third of the credit after these are graded.
- Effective written and spoken communication is fundamental to solving global water problems.
- Email and CatCourses messaging is the preferred form of communication. Please keep in mind that I travel frequently and often do not have cell/internet access.
- Guest lecturers are an important part of the learning experience; they should be treated with the utmost respect as they are donating their time and expertise to enrich your learning opportunity in this class. **Absenteeism and poor behavior (e.g., sleeping) will be reflected in class scores**.
- **IMPORTANT: no cell phone use in class**. If you are on your phone during lecture, you will be asked to leave.
- **This syllabus, and especially the schedule, is subject to change**. You will be given plenty of notice.

Reading:

There are three texts and several electronic readings required for this class. The two texts (Mount / Hanak et al./Loucks and van Beek) are complementary and will be read in parallel. The journal readings are intended to provide context to specialized water resource issues. Set a schedule and keep up with the readings.

Primary Textbooks:

1. Mount, J. F. (1995). *California Rivers and Streams: the conflict between fluvial process and land use*. University of California Press.
2. Hanak, E., (2011). *Managing California's water: from conflict to reconciliation*. Public Policy Institute of California. [electronic version provided to you on CatCourses]
3. Loucks and van Beek (2005) *Water Resource System Planning and Management*. Springer. [electronic version provided to you on CatCourses]

Other readings

Reading list:

California Department of Water Resources (1998), *California Water Plan Update, Bulletin 160-98*, Sacramento, CA. [others available including 160-15]

Cox, W.E. (1982), "Water Law Primer," *Journal of Water Resources Planning and Management*, ASCE, Vol. 108, No. WR1, pp. 107-122.

Draper, A.J., M.W. Jenkins, K.W. Kirby, J.R. Lund, and R.E. Howitt (2003), "Economic-Engineering Optimization for California Water Management," *Journal of Water Resources Planning and Management*, Vol. 129, No. 3, May, pp. 155-164.

Frontinus, S.J. (97AD), *The Water Supply of the City of Rome*, Clemens Herschel's translation.

Gregory, R.S. and R.L. Keeney (2003), "Making Smarter Environmental Management Decisions," *Journal of the American Water Resources Association*, Vol. 38, No. 6, Dec., pp. 1601-1612.

Harou, J.J., Met al., "Hydro-economic Models: Concepts, Design, Applications, and Future Prospects," *Journal of Hydrology*, Vol. 375, Iss. 3-4, 15 September, pp. 627-643, 2009.

Lund, J.R., "Flood Management in California," *Water*, Vol. 4, pp. 157-169; doi:10.3390/w4010157, 2012.
U.S. Water Resources Council (1983), *Economic and Environmental Principles and Guidelines for Water And Related Land Resources Implementation Studies*.

Additional Resources:

I will be posting a number of additional resources throughout the semester. These include:

1. Short briefings from the Public Policy Institute of California (ppic.org)
2. Videos of important topics

Please also expect content of news stories to be on exams, so please stay abreast of current events. The following are highly suggested sources of current events:

1) B&C Water News http://bcwaternews.com/ sign-up for daily briefs
2) Maven's Notebook http://mavensnotebook.com/ annotated collection of water news
3) On the Public Record http://onthepublicrecord.org/ pseudonymous water insider blog
4) California Water Blog http://californiawaterblog.com/ weekly in-depth commentary
5) California Weather Blog http://www.weatherwest.com/ informed insights on weather

This site is great for jobs in the water sector →

6) Josh's Water Jobs https://www.joshswaterjobs.com/

GRADING:

Grading will be on a curve with approximately 10% A, 45% B, 35% C, and 10% D-F ranges. The following breaks down the assignments and available grading points (Total = 100 points).

Class Homework Assignments (30 points):

There are 5 class homework assignments worth 6 points each. These assignments are problem set based and are thus generally quantitative in nature; assignment descriptions will be provided. Please upload electronic versions on the due date to CatCourses and turn in paper copies only when instructed to do so.

Midterm Exams (30 points):

There are two midterm exams (February 19, March 14), each worth 15 points. Each exam will cover the material from the preceding weeks and will consist of a series of short problem sets and short answer questions. In addition, elements from lectures and homework assignments, additional exam content will come from the texts and assigned readings, current events, and material introduced by guest lecturers. Three things that almost always make it on to exams are maps, abbreviations/acronyms, and contemporary news issues.

Final Project (20 points):

A term project is required. Further detail for the design project will be provided in a separate handout. Various class meetings will provide the analytical skills necessary to complete the assignment.

Class Participation (5 points):

Your class participation evaluation will include points brought to discussion about the reading materials, and responding to prompts from instructor and guest lecturers.

Final Exam (15 points):

The final examination is scheduled for **May 17th (11:30-14:30 pm)**. It will be comprehensive.

Extra Credit (5 points):

There is one optional guest lecture. Prof. Jay Lund from UC Davis is coming to the Environmental Seminar Series on Wednesday February 13, from 12:30 am to 1:30pm in SSB 120 (unless otherwise noticed). A short write up (500 words) in response to a prompt from the speaker will be accepted for 5 extra points.

Tentative Class Schedule: A brief breakdown is shown in the last page of the syllabus.

UC MERCED STANDARD TERMS AND CONDITIONS

Academic Integrity

- Every student in this course is expected to abide by the University of California Merced's Academic Honesty Policy. Any work submitted by a student in this course for academic credit will be the student's own work.
- Plagarism is a type of academic misconduct. Please review the U.C. Merced Library webpage to learn more about what plagarism is and how to avoid it. http://libguides.ucmerced.edu/citing_sources/citing-sources_avoiding-plagiarism
- The U.C. Merced Library link above also contains information on citations.
- Here is information on common types of plagiarism: https://www.bowdoin.edu/studentaffairs/academic-honesty/common-types.shtml
- References, also referred to as citations, are ways to document where you obtained content used in your work. This course will use the APA Style for references. You can locate more information on how to create references using the APA format using the Purdue Owl (Online Writing Lab). https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_style_introduction.html
- If you have any questions about plagiarism that arise, and you are uncertain, feel free to inquire with me about it.

Accommodations for Students with Disabilities:
University of California, Merced is committed to creating learning environments that are accessible to all. If you anticipate or experience physical or academic barriers based on a disability, please feel welcome to contact me privately so we can discuss options. In addition, please contact Student Accessibility Services (SAS) at (209) 228-6996 or disabilityservices@ucmerced.edu as soon as possible to explore reasonable accommodations. All accommodations must have prior approval from Student Accessibility Services on the basis of appropriate documentation.

If you anticipate or experience barriers due to pregnancy, temporary medical condition, or injury, please feel welcome to contact me so we can discuss options. You are encouraged to contact the Dean of Students for support and resources at (209) 228-3633 or https://studentaffairs.ucmerced.edu/dean-students.

Tentative Schedule Subject to Change [Updated January 20, 2019]

Class	Day of the Week	Date	Points	Due	Topic	Assignment	Mount	Hanak	Other
1	Tuesday	22-Jan			LOGISTICS		Ch 1-9	Ch 1-2	
2	Thursday	24-Jan			Water Resources				
3	Tuesday	29-Jan				HW 1			Loucks Ch 3
4	Thursday	31-Jan							Loucks Ch 3
5	Tuesday	5-Feb	6	HW1					Loucks Ch 3
6	Thursday	7-Feb				HW 2			
7	Tuesday	12-Feb							
EC	Wednesday	13-Feb	5 (EC)	21-Feb	Jay Lund Seminar Extra Credit				
8	Thursday	14-Feb	6	HW 2					
10	Tuesday	19-Feb	15	***MIDTERM***					
11	Thursday	21-Feb			Water Resources Management		Ch 10-17	Ch 3-6	Harou et al.
12	Tuesday	26-Feb				HW 3			Loucks Ch 4
13	Thursday	28-Feb							Draper et al.
14	Tuesday	5-Mar	6	HW 3					Loucks Ch 4
15	Thursday	7-Mar							Loucks Ch 4
16	Tuesday	12-Mar							
17	Thursday	14-Mar	15	***MIDTERM***					
18	Tuesday	19-Mar							Bulletin 160-15
19	Thursday	21-Mar		Term Project					
20	Tuesday	26-Mar	**SPRING BREAK**						
21	Thursday	28-Mar							
22	Tuesday	2-Apr		Term Project					
23	Thursday	4-Apr		Term Project					
24	Tuesday	9-Apr				HW 4		Ch 7-10	
25	Thursday	11-Apr	6		Case Studies & Guest Lectures				
26	Tuesday	16-Apr		HW 4					

27	Thursday	18-Apr							
28	Tuesday	23-Apr				HW 5			
29	Thursday	25-Apr							
30	Tuesday	30-Apr	6	HW 5					
31	Thursday	2-May							
32	Tuesday	7-May							
33	Thursday	9-May	20		**Exam Review**	*Final Project*			
	FRIDAY	17-May	15	**FINAL EXAM 1130-1430 Granite Pass 145**					