CE 484 Water Treatment Design (3 units)

2013 Fall Semester — Course Syllabus

Lecture	Wednesday	6:30-9:10 pm	KAP 145
Professor	Dr. Arturo Burbano		
Office	KAP 203		
Phone	(626) 226-7641		
Email	burbanop@usc.edu arturo.burbano@mwhglobal.com		
Office Hours	5:30-6:30 Wednesday		
Prerequisites	CE 451 Water Resources Engineering (3, Sp) CE 463*L* Water Chemistry and Analysis (3, Sp)		
Textbook(s)	Kawamura, Susumu. *Integrated Design and Operation of Water Treatment Facilities*, 2nd Ed., John Wiley and Sons, Inc., 2000.		
Other Materials	Supplementary class notes and design documents will be provided during the course.		
Other References	MWH, *Water Treatment: Principles and Design*, 2nd. Ed., John Wiley and Sons, Inc., 2005.		
Course Description (from Catalogue)	Pre-design studies, precipitation softening, coagulation and flocculation, sedimentation, filtration, sludge handling, chlorination, chloramination, ozonation; plant hydraulics, flow measurement, pumps, instrumentation and control, tertiary treatment. *Prerequisites:* CE 451 Water Resources Engineering, CE 463*L* Water Chemistry and Analysis.		
Course Objectives	Study the principles and design of water treatment processes, including coagulation, flocculation, sedimentation, filtration, disinfection (chlorination, chloramination, ozonation), advanced oxidation, and membrane filtration. Study different phases of water treatment design, regulations pertaining to drinking water, and contemporary topics such as DBP control and emerging contaminants.		
Learning Objectives	Familiarize the student with the fundamentals of water treatment technologies and the considerations for its design and implementation in treatment plants.		
Policies on:			
Late work	Penalty depending on the case		
Make-up work	TBD		
Incomplete work	Partial credit		
Extra credit	TBD		

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Final grade is based on the following percentages of graded coursework :		
Homework	10	%
Quizzes	10	%
Midterm 1	15	%
Presentations	10	%
Project	10	%
Final Exam	35	%
Participation	10	%
Total	100	%

Class Schedule

Week	WED	Topics	Assignments[1]	Problems	Due Dates
1	8/28	Water Treatment and Design Fundamentals	1-13		
2	9/4	Feasibility, Bench, and Pilot Studies	15-22		
3	9/11	Pre-Design and Design Phases	36-56; 59-73		
4	9/18	Water Treatment Regulations	27-36	X	
5	9/25	Chemical Dosing	343-367	X	
6	10/2	Coagulation, Flocculation, Sedimentation – Part I	74-101	X	
7	10/9	Coagulation, Flocculation, Sedimentation – Part II	105-184	X	
8	10/16	Mid-term	-		
9	10/23	Filtration – Part I	194-229	X	
10	10/30	Filtration – Part II	230-290	X	
11	11/6	Disinfection and DBP analysis	292-318	X	
12	11/13	Activated Carbon Adsorption	569-577	X	
13	11/20	Membrane Processes (MF, UF, RO)	583-591	X	
14	11/27	Waste Handling and Disposal	372-400	X	
15	12/04	Advanced Oxidation & Emerging Contaminants	-	X	
16	12/11	Final Exam	-		

[1] Reading assignments correspond to pages from the textbook. Other assignments specific to each session are not included here.

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STATEMENT ON ACADEMIC INTEGRITY

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own.

All students are expected to understand and abide by these principles. *SCampus,* the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A:

http://www.usc.edu/dept/publications/SCAMPUS/gov/

Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at:

http://www.usc.edu/student-affairs/SJACS/

STATEMENT FOR STUDENTS WITH DISABILITIES

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible.

DSP Contact Information

Location: STU 301

Hours open: 8:30 a.m. until 5:00 p.m., Monday — Friday

Phone number: (213) 740-0776