

CEE 483: DRINKING WATER TREATMENT

Winter 2006

MWF 8:30-9:20, More Hall 221

<http://faculty.washington.edu/markbenj/CEE483/index.html>

Prerequisite: CEE 350 or consent of instructor.

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Office Hours: TTh 1:30-1:20

Other times by appointment

Text: Droste, R.L., Theory and Practice of Water and Wastewater Treatment, John Wiley and Sons, New York, 1997.

Reference: MWH, Water Treatment Principles and Design, Wiley, New York, 2005.

CEE 483: DRINKING WATER TREATMENT (WIN 2006)

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Period	Date	Topic	Text Assignment
1	1/4	Introduction; History of drinking water treatment	EPA Drinking Water ; Tolt ; Cedar ; Seattle ; AWWA ; 182-185, 187-201, 219-227;
2	1/6	Contaminants in drinking water and their regulation; Overview of water treatment processes; slides	243-247 (skip Method I, p.246); 250(Ex10.1) - 254(10.2)
3	1/9	Mass balance concepts; reaction and advection; Reaction rate expressions	Class Notes on Mass Balances
4	1/11	Mass balances – flow patterns in reactors; mean hydraulic retention time	254(10.2) - 258(10.2.3); 261(10.2.4) - 264(10.3.2)
5	1/13	Unsteady flows and equalization	Sec.10.4; skip discussion of Fig.10.14 (it's incorrect)
	1/16	MLK Day; no class	
6	1/18	Type I sedimentation – particle settling velocities	106-109, 287-293, Fig5-7
7	1/20	Midterm exam #1	Practice problems and solutions
8	1/23	Type I sedimentation – removal efficiency	293-298
9	1/25	Coagulation & Flocculation	384-388; 400-404; Zeta-Meter booklet
10	1/27	Type II sedimentation	298-308; see Note #1
11	1/30	Type II sedimentation	
	1/31	Field trip: Skagit Valley WTP; leave at **	
12	2/1	Filtration: Particle removal	416-423, 446-451
13	2/3	Filtration: Head loss, backwashing	423-452
14	2/6	Summary and practice: particle removal	
15	2/8	Midterm exam #2	
16	2/10	Precipitation: coagulants	
17	2/13	Precipitation: principles	Solutions to midterm #2
18	2/15	Precipitation: softening	457-471; Handout
19	2/17	Oxidation: principles	
	2/20	President's Day; no class	
		Field trip: Everett WTP	
20	2/22	Precipitation with oxidation: Fe, Mn, corrosion	471-474
21	2/24	Chlorine chemistry and disinfection	513-527
22	2/27	Disinfection by-products; alternative disinfectants	527-538
23	3/1	Adsorption and ion exchange	477-479, 484-490
24	3/3	Adsorption and ion exchange	490-507
25	3/6	Membrane treatment systems	480-484
		Field trip: Tolt WTP	
26	3/8	Membrane treatment systems (Chang)	
27	3/10	Membrane treatment systems	
	3/14	Final exam 8:30-10:30	