16:375:527 Environmental Process Dynamics

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Tentative Schedule (Fall 2006)

Sept 5	Process dynamics, conservation of mass, energy, and momentum	**HW1**
Sept 7	Continuity equation and ideal PFR	
Sept 12	CMBR, CMFR and CMFRs in series	**HW2**
Sept 14	Transport Processes (I)	
Sept 19	Transport Processes (II)	
Sept 21	Density function and residence time analysis	**HW3**
Sept 26	Dispersion models, dedimensionalization and scale-up	
Sept 28	Diffusion, Fick's laws, Stokes-Einstein and Wilke-Chang equations	**HW4**
Oct 3	Interphase mass transfer and aeration process analysis	
Oct 5	Air-stripping	
Oct 10	NAPL dissolution, surfactant, and NAPL remediation	
Oct 12	Intermolecular forces and calculation of the VDW forces	**HW5**
Oct 17	Particle-particle interactions and the double layer model	
Oct 19	Particle-particle interactions	
Oct 24	Sorption processes: Equilibrium	
Oct 26	**Exam I**	
Oct 31	Sorption processes: Rate	**HW6**
Nov 2	Desorption process, bioavailability, and modeling	
Nov 7	Chemical kinetics: Concepts and simple models	**HW7**
Nov 9	Chemical kinetics: Complex reactions and experimental design	
Nov14	Chemical kinetics: Advanced theories	
Nov 16	Environmental catalysts: Homogeneous vs. heterogeneous systems	
Nov 21	Environmental nanotechnology: An introduction	
Nov 23	**Thanksgiving (No class)**	
Nov 28	Process dynamics analysis for complex systems	
Nov 30	Process dynamics analysis for complex systems	
Dec 5	Term paper presentation (30 minutes each)	
Dec 7	TBA	
Dec 12	**Exam II**	