CE 482 - WASTEWATER TREATMENT AND WATER RECLAMATION (Summer 2018)

Jeff Kuo, PhD, PE

	Date	***Topic***
1.	05/28/18	*Wastewater Engineering: An Overview* Wastewater & sludge treatment Wastewater reclamation & effluent disposal *Wastewater Characteristics I* Wastewater constituents and sampling Definitions and measurements of physical characteristics Inorganic non-metallic and metallic constituents
2.	06/04/18	*Wastewater Characteristics II* Definitions and measurements of organic chemical characteristics Biological characteristics Toxicity testing
3.	06/11/18	*Analysis and Selection of Flow Rates and Mass Loadings* Selection of design flow rate and mass loading *Introduction to Process Analysis and Selection* Mass balance concept Reactor types and flow regimes Elements of conceptual process design
4.	06/18/18	*Physical Unit Operations I* Screening Flow equalization Mixing and flocculation Gravity separation theory *Physical Unit Operations II* Primary sedimentation and high rate clarification Flotation Aeration, oxygen transfer and VOC removal
5.	06/25/18	*Chemical Unit Processes* Chemical coagulation Precipitation Chemical oxidation *Review for the Midterm*
6.	07/02/18	*Biological Unit Processes I - Fundamentals* Microbial metabolism Kinetics of biological growth Cell growth and substrate utilization *Biological Unit Processes I - Suspended Growth* Activated sludge process
	07/07/18	**Midterm (9:30 - 11:20)**

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7.	07/09/18	*Biological Unit Processes I - Suspended Growth* Design calculations *Biological Unit Processes II - Attached Growth and Others* Trickling filters Rotary biological contactors Anaerobic wastewater treatment Low-tech solutions
8.	07/16/18	*Biological Unit Processes III - O&M and Nutrient Removals* Process analysis Process Control Operational problems Biological nutrient removal *Sludge Treatment* Sludge sources, characterization, and quantities Preliminary operations Conditioning and dewatering
9.	07/23/18	*Sludge Treatment* Stabilization Sludge digestion Composting Incineration and land disposal *Disinfection Processes* Disinfection theory Chlorination/chloramination Dechlorination Ozonation and UV disinfection
10.	07/30/18	*Advanced Wastewater Treatment* Depth filtration Membrane processes Adsorption Ion exchange Air stripping Advanced oxidation process *Wastewater Reclamation & Reuse* Issues Wastewater reclamation technologies
	08/04/18	***Final Exam (9:30-11:20)***