EVT 246 Operation of Wastewater Treatment Plants

Course Description: A course on efficient operation of wastewater treatment plants that helps students prepare for certification exams. Topics include: start-up, daily operations, interpretation of lab results, and possible approaches to solving operational problems.

Prerequisites(s): EVT 166 **Corequisite(s):** No corequisite

Lecture Hours: 2	Lab Hours: 2	Credit Hours: 3
Lab Fee: 70	Supplemental Fee: 0	Purpose:
☐ Transfer Assurance Guide Course (TAG)	☐ Transfer Module Course (TM)	
Course Format: Lec/Lab	Grading: A/B/C/D/F/I	
Delivery Method: □ Web	□ Hybrid	☒ Classroom
Semesters Offered: ☒ Fall	□ Spring	□ Summer

Course Primary Text:

Title: Operation of Wastewater Treatment Plants Vol I/II Title: 25th AALSO Long Beach 2019 Field Guide	Edition: 7
Author(s): Office of Water Programs; College of Engineering and Computer Science; California State University, Sacramento Author(s); Michael Buster, Andrew Bywater, Trevor Erdman, Elizabeth Fisher, Johnny May, Laurie Patel, Jason Steinmetz, Karen Tuttle Stearns	
Publisher: University Enterprises, Inc. Publisher:	

Supplemental Materials:

Basic Science Concepts and Applications for Wastewater (1st ed) American Water Works Association
Handouts / Field Trips

Course Outcomes:

1	EVT Students will apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve well-defined environmental engineering problems.
2	EVT Students will design solutions for well-defined environmental engineering technology problems and assist with the engineering design of systems, components, or processes appropriate to the discipline.

3	EVT Students will apply written, oral and graphical communication in well-defined technical and non-technical environments, while identifying and using appropriate technical literature.
4	EVT Students will perform standard tests, measurements and experiments then analyze and interpret the results.
5	EVT Students will perform effectively as a member of a technical team.
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Course Topics:

Week 1	Introduction to the Field of Wastewater Treatment Diversity Found in Aquatic Exhibitry (AALSO Ch 1) LSS Operational Standards (AALSO Ch 15)
Week 2	Conversions /Raw vs. Settled vs Filtered vs Secondary vs Effluent (Final)/Areas and Volumes/Applied Math (AALSO Ch 16) – Applied Math for LSO (AALSO Ch 18)
Week 3	Preliminary Treatment / Pumps and Motors (AALSO Ch 7)
Week 4	Percent Solids / Specific Gravity (s.g.) Pounds Problems In /Out Efficiency / Concentration / Flowrate / Mass
Week 5	Primary Treatment / Valves (AALSO Ch 8)
Week 6	Hydraulic Loadings Organic Loadings / Velocity
Week 7	Trickling Filters, Rotating Biological Contactors, Waste Stabilization Ponds / Mid-term Filtration (AALSO Ch 9)
Week 8	Detention Time/Surface Overflow Rate/Weir Overflow Rate
Week 9	Activated Sludge / Aeration Requirements/F/M Ratio/ SVI/S.S. Test/MCRT/Sludge Age/Concentrations/ Weighted Averages
Week 10	Maintenance / Life Support Maintenance Equipment (AALSO Ch 11) Heat Exchangers (AALSO Ch 12)
Week 11	Disinfection and Chlorination / Disinfection and Sterilization (AALSO Ch 10)
Week 12	Automation Control Systems (AALSO Ch 13) Construction and System Start-Up (AALSO Ch 14)
Week 13	Sludge Digestion /Solids Handling / Incineration/Dry Solids to Digester

	Population Equivalent/Horsepowers / Costs
Week 14	Laboratory Practices - Fecals / cBOD Test / Suspended Solids Test/Safety (AALSO Ch 2)
Week 15	FINAL EXAM / AALSO FINAL EXAM

Methods of Evaluation/Assessment

□ Formative: □ Summative

List assessment activities (e.g. quizzes, discussions, essays, research papers, debates, oral presentations, exams):

Quizzes
Homework
Exams
Discussions
Field Trips

Course Keeper: Barbara Ann Browne Date Completed: 07/07/20