

## CE 442 - WATER AND WASTEWATER TREATMENT

**2006-07 Catalog Data: CE 442 - Water and Wastewater Treatment Design 3** Prereq CE 341; major in engineering or environmental science. Water and wastewater treatment processes and design.

**Prerequisites: CE 341**

### *Course Objectives*

To introduce the student to the theory and design of water and wastewater treatment systems. This involves the design and operational strategies of various physical, chemical, and biological treatment processes.

### *Topics*

1. Water and Wastewater Treatment Systems – an overview
2. Chemical Reactor Theory
3. Flocculation
4. Sedimentation
5. Filtration
6. Coagulation
7. Water Softening
8. Disinfection
9. Biological Treatment Processes
10. Activated sludge processes
11. Fixed film processes
12. Lagoons
13. Aeration
14. Sludge Treatment and Handling

**Course Outcomes:** This course is contributing towards the following educational outcomes set forth by the CEE department. The following table offers details by outcome.

<b>Outcome</b>	<b>Role of CE 442</b>
List the outcome here	Describe how the course fulfills it here
Outcome 3: The ability to design a component, system or process to meet desired needs and imposed constraints.	The design process for water and wastewater treatment is an integral part of the course. A significant portion of the lectures, supplemental handouts, homework assignments, and special design problem assignments include a design component.
Outcome 6: The ability to identify, formulate and solve civil engineering problems.	Homework problems and lecture material are oriented toward practical application and design of water and wastewater treatment unit operations.
Outcome 10: Broad educational experiences that provide an awareness and understanding of the impact of engineering on global and societal issues.	Much of the lecture material and homework assignments are based on “real world” examples of minimizing the impact of municipal and industrial waste streams on the environment. As such, societal issues are addressed in the design process.

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