



CE 431 – Design of Water and Wastewater Treatment Systems

Code and Name: CE 431 – Design of Water and Wastewater Treatment Systems

Credit Hours: 3 (Lecture: 3, Tutorial: 1)

Textbook:

- Water and Wastewater Engineering: Davis M., 1st Edition, McGraw-Hill, 2010

Other References:

- *Wastewater Engineering: Treatment and Resource Recovery, 5th edition by Inc. Metcalf & Eddy*
- *Course handouts: distributed on a regular basis to provide more information on the topic.*

Course Description:

Design of advanced water treatment systems (adsorbers and membrane processes). Design of Wastewater Treatment plant: screening, grit removal, primary and secondary clarification, biological process, disinfection of the effluent, processing of sludge, and treated water reuse.

Pre-requisites: CE 331 Environmental Engineering Processes

Co-requisites: None

Course Learning Outcomes:

With relation to ABET Student Outcomes (From Fall 2019-SOs: 1-7)

1. Establish the background to solve water and wastewater treatment problem (1)
2. Design different water and wastewater treatment elements(1)
3. Know relevant design techniques of different water and wastewater treatment elements (2)
4. Recognize the impact of economic and environmental context of treatment process design (4)

Topics to be covered:

- Design of advanced water treatment systems (adsorbers and membrane processes)
- Wastewater Treatment system design: screening, grit removal
- Wastewater Treatment system design: primary clarifier
- Wastewater Treatment system design: Primary biological process (suspended system)
- Wastewater Treatment system design: Primary biological process (attached growth system)
- Wastewater Treatment system design: Secondary clarification
- Wastewater Treatment system design: disinfection of the effluent
- Wastewater Treatment system design: Processing of sludge, and treated water reuse

Grading Policy:

The grading for the course is: 60% coursework and 40% Final Exam. The course work consists of two Midterm Exams, where each midterm exam is worth 20%. It also includes quizzes, and/or projects for the remaining 20% that is modified by the course instructor.

