



## CE331–Environmental Engineering Processes

**Code and Name:** CE 331–Environmental Engineering Processes

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

**Textbook:**

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

**Other References:**

-- *Introduction to Environmental Engineering and Science, Masters M. G Pearson 3rd edition, 2014*

- *Course handouts: distributed on a regular basis to provide more information on the topic.*

**Course Description:**

Unit Operation and Unit Process in water treatment design: water intake, screening, grit removal, sedimentation, coagulation, flocculation, filtration and disinfection. Design of wastewater networks. Introduction to wastewater treatment processes.

**Pre-requisites:** CE 231 Fundamentals of Environmental Engineering, CE241 Fluid Mechanics

**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 treatment elements “Water Intake, screen, grit chamber, coagulation, flocculator, sedimentation basin, filtration basin, disinfection” (2)
4. Recognize the impact of economic and environmental context of treatment process design(4)

**Topics to be covered:**

- Unit Operation and Unit Process in Water Treatment: Design of water intake, Screening and Grit removal unit
- Unit Operation and Unit Process in Water Treatment: Design of Coagulation and Flocculation unit
- Unit Operation and Unit Process in Water Treatment: Design of sedimentation tank, Design of Filtration unit
- Unit Operation and Unit Process in Water Treatment: Disinfection
- Sanitary sewer design: Introduction, pre-design activities, gravity sewer collection system design
- Unit Operation and Unit Process in Wastewater Treatment: Introduction to primary treatment stages
- Unit Operation and Unit Process in Wastewater Treatment: Introduction to secondary treatment stages

**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.

