

ABET course syllabus (Wastewater Engineering)

1. *Course number and name*  
0901471: Wastewater Engineering
2. *Credits and contact hours*  
3 Credit Hours
3. *Instructor's or course coordinator's name*  
Instructor: Bashar Al Smadi, Associate Professor of Civil Engineering  
Course Coordinator: Bashar Al Smadi, Associate Professor of Civil Engineering
4. *Text book, title, author, and year*
  - "Water and Wastewater Engineering: Design principles and practice", Mackenzie L. Davis (2010), McGraw-Hill
  - 1. *other supplemental materials*
    - "Water Supply and Pollution Control", Warren Viessman, Jr. and Mark J. Hammer, (2005), Seventh Edition, Prentice Hall
5. *Specific course information*
  1. *brief description of the content of the course (catalog description)*  
Quantities and characteristics of wastewater. Design of municipal sewer system. Municipal wastewater treatment: pretreatment and flow equalization, primary treatment, secondary treatment; activated sludge and trickling filter. Introduction to sludge treatment and disposal.
  2. *prerequisites or co-requisites*  
Prerequisite: Drinking Water Engineering (0901371)
  3. *indicate whether a required, elective, or selected elective course in the program*  
Required for Civil Engineering
6. *Specific goals for the course*
  1. *specific outcomes of instruction, ex. The student will be able to explain the significance of current research about a particular topic.*
    - The student will be able to analyze the quantities of the wastewater generated from the municipal uses.
    - Student will be able to design sanitary sewers
    - Student will be able to understand the physical, chemical, and biological characteristics of wastewater as well as their measurements
    - Student will be able to understand the biological treatment principles and processes of wastewater including suspended growth systems such as the Activated Sludge and the attached growth systems such as trickling filters
    - Student will be able to design foundations on expansive soils
    - Student will be able to design different wastewater treatment processes

2. *Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.*

Course addresses ABET Student Outcome(s): a, c, e, and k

7. *Brief list of topics to be covered*

- Wastewater sources and flow rates
  - Design period
  - Typical wastewater flow rates from different sources
  - Ratio of extreme flows to average daily flow
  - Components of wastewater
  - Variability of wastewater flow rates
- Sanitary sewer design
  - Appurtenances
  - Pre-design activities
  - Gravity sewer collection system design
- Selected pollution parameters
  - Total and suspended solids
  - Biochemical and chemical oxygen demands
  - Coliform bacteria
- Wastewater treatment
  - Characteristics of domestic wastewater
  - Wastewater treatment standards
  - On-site disposal systems
  - Municipal wastewater treatment systems
  - Unit operations of pretreatment
  - Primary treatment
  - Unit processes of secondary treatment
  - Disinfection (if time permits)