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

   1. other supplemental materials

5. Specific course information
   1. brief description of the content of the course (catalog description)

   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)