**ABET course syllabus (Environmental Engineering Laboratory)**

1. **Course number and name**

CE 0901472: Environmental Engineering Laboratory.

1. **Credits and contact hours**

1 Credit Hour.

1. **Instructors’ names and contact information**

Shadi Moqbel, Assistant Professor of Civil Engineering (course coordinator).

Ghada Kassab, Assistant Professor of Civil Engineering.

Husam A. Abu Hajar, Assistant Professor of Civil Engineering.

1. **Text book, title, author, and year**

* “Standard Methods for the Examination of Water and Wastewater", Rice et al., 22nd Edition, 2012.
* “Water and Wastewater Engineering”, Davis, 1st Edition, 2010.
  1. *other supplemental materials*
     + Laboratory manual and class notes.

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

In this course, several experiments related to water and wastewater analysis and treatment are covered. Each experiment is explained in theory and the apparatus and chemicals used are illustrated with a special emphasis on safety throughout the experiment. Students are divided into groups but each student is required to submit a high-quality written report for each experiment individually. The experiments taught in this course are power of hydrogen; acidity; alkalinity; chloride; hardness; softening; solids; chlorine; ammonia; dissolved oxygen; biochemical oxygen demand (BOD); and chemical oxygen demand (COD).

* 1. *prerequisites or co-requisites*

CE 0901471 Wastewater Engineering (co-requisite).

* 1. *indicate whether a required, elective, or selected elective course in the program*

Required for Civil Engineering.

1. **Specific goals for the course**
   1. *specific outcomes of instruction:*

* The student is expected to apply fundamental and quantitative knowledge in environmental engineering problems.
* The student is expected to process and interpret experimental data using proper statistical techniques.
* The student is expected to conduct several experiments on water quality parameters and understand the significance of these experiments in the field of environmental engineering.
* The student is expected to present the experimental data in well-written formal reports.
  1. *Explicitly indicate which of the student outcomes listed in Criterion 6 or any other outcomes are addressed by the course.*

Course addresses ABET Student Outcome(s): 6.1 , 6.2 , 6.3.

1. **Brief list of topics to be covered**

* Power of hydrogen.
* Acidity and Alkalinity.
* Chloride.
* Coagulation and flocculation.
* Hardness.
* Softening.
* Solids.
* Dissolved oxygen.
* Biochemical oxygen demand.
* Chemical oxygen demand.

1. **Grading**

30% reports, 30% midterm exam, 40% final exam.