Catalog Description: Study and evaluation of the chemical characteristics of ground water, surface water, municipal wastewaters, and industrial effluents. Acid-base reactions, oxidation-reduction reactions, gas solubility, adsorption, precipitation, and dissolution. Laboratory covers analysis of physical, chemical, and biological properties of water.

Prerequisites: CE 3325 – Introduction to Environmental Engineering (or equivalent knowledge)

Textbook: Chemistry for Environmental and Engineering Science
Clair N. Sawyer, Perry L. McCarty, and Gene F. Parkin

Course Objectives: The purpose of this course is to introduce students to the basic concepts of environmental chemistry and familiarize them with the analytical procedures used to characterize water and wastewater samples. The course objectives will be achieved through classroom instruction and hands-on experience in the laboratory.

Specifically, the student will develop the following skills and be able to do the following (the CE program outcomes addressed by each objective are given in parentheses):

1. Explain the theory associated with the most common test encountered in water/wastewater characterization. (4)
2. Use proper laboratory techniques in conducting quantitative laboratory analyses (4)
3. Collect laboratory data that are accurate and reliable (4)
4. Write a concise, informative, accurate lab report (3)
5. Work on various teams to carry out specific data collection and reporting activities (3,4)

Topics covered

Basic Concepts from General Chemistry (Chapter 2)
Basic Concepts from Physical Chemistry (Chapter 3)
Basic Concepts from Equilibrium Chemistry (Chapter 4)
Basic Concepts from Colloidal Chemistry (Chapter 7)
Statistical Analysis of Analytical Data (Chapter 10)
Basic Concepts from Quantitative Chemistry (Chapters 9 & 11)
Water and Wastewater Analysis Techniques (Chapters 12-33)

Class/Laboratory Schedule

Class: M 10:00 to 11:30 AM
Lab: MW 1:00 to 3:50 PM

Prepared by: Dr. Anthony Tarquin
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