New York University School of Engineering  
Department of Civil and Urban Engineering  
CE-U3223 Environmental Engineering 1  
Spring 2018  
Instructor: Mahmoud Ahmed  
Wednesday 04:30 PM – 6:20 PM

To contact professor: mam891@nyu.edu  
Office hours: By appointment

Course Pre-requisites: CE-U3213 Fluid Mechanics and Hydraulics or equivalent

Course Description: This course will introduce the student to the various areas within environmental engineering and their associated principles. Topics include mass balances, environmental chemistry, public health risk assessment, air quality, water quality, drinking water treatment, wastewater treatment and laboratory analysis of water and wastewater samples and treatment process tests.

Course Objectives:
1. Apply engineering dimensions, material and energy balance and basic reaction kinetics principles in solving environmental engineering problems
2. Understand and apply environmental regulations and comprehend the risk and impact of pollution generated by human activities, on the well being of ecosystems.
3. Understand the concept of surface and groundwater pollution as well as air pollution and apply engineering principles to analyze environmental problems
4. Understand the water quality standards and be able to analyze major unit operations in drinking water treatment and perform basic design for some unit operation.
5. Recognize and identify the science and engineering principles behind wastewater treatment operations.
6. Recognition of global atmosphere/climate changes and the need for solid waste management

ABET Student Outcomes:
a. An ability to apply knowledge of mathematics, science, and engineering.
b. An ability to design and conduct experiments, as well as to analyze and interpret data.
e. An ability to identify, formulate, and solve engineering problems.
g. An ability to communicate effectively.
j. Knowledge of contemporary issues.
k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Course Structure:
Lecture: 21/3 hours per week  
Laboratory: 3.0 hours per week

Readings:
3. Lab Material (will be provided)
Course requirements:
1. Attendance and Participation: Regular, on-time class and lab attendance is expected. Attendance will be taken into consideration for the professional evaluation grade.
2. Class Format: Lectures will be supplemented with textbook reading, homework and exams.
3. Lab Format: Class will be divided in groups. Each student must turn in their own lab report.
4. Homework: will be due one week after it is assigned and should be turned in at the beginning of class.
5. Exams: There will be two midterm exams and a final exam. Each exam will be an in-class, closed-book exam. An equation sheet will be provided. The exams will cover lecture material and homework assignments.
6. Blackboard: The syllabus, course notes, homework assignments, and lab materials will be posted on NYU Classes course website. Powerpoints will be posted prior to the lecture in which they will be discussed; students are encouraged to print them and bring them to class.
7. Course evaluation: An evaluation of the course and instructor will be conducted at the end of the semester using the approved Course/Instructor evaluation forms.

Grading:
The attainment of the academic goals of the course will be assessed according to the following grading scheme:
Homework 10%
Lab 20%
Midterm exam 30%
Final exam 40%

Topics Covered:
Part I: Lectures
1. Introduction to Environmental Engineering
2. Engineering Dimensions and Units
3. Mass and Energy Transfer
4. Environmental Chemistry
5. Mathematics of Growth and System Dynamics
6. Risk Assessment
7. Water Pollution
8. Water Quality
9. Air Pollution
10. Global Atmosphere Changes and Climate Change
11. Solid Waste Management

Part II: Laboratories
1. Lab Policy and Safety Guide
2. Lab #1: pH, Conductivity & Turbidity
3. Lab #2: Alkalinity & Hardiness
4. Lab #3: Computational lab 1 (include Gas Chromatography Demonstration)
5. Lab #4: DO & BOD
6. Lab #5: Computational lab 2
7. Lab #6: Coagulation & Flocculation
8. Lab #7: Adsorption
9. Lab #8: Sedimentation

Moses Center Statement of Disability
If you are student with a disability who is requesting accommodations, please contact New York University’s Moses Center for Students with Disabilities at 212-998-4980 or mosecsd@nyu.edu. You must be registered with CSD to receive accommodations. Information about the Moses Center can be found at www.nyu.edu/csd. The Moses Center is located at 726 Broadway on the 2nd floor.