The Hashemite University
Faculty of Engineering
Civil Engineering Program
Course Syllabus

Course Title:	Environmental Enging 3 (2,1, 0)	**Course Number:**	110401456
Designation:	Compulsory	**Prerequisite(s):**	110401455
Instructor:	Prof. Ahmed N Bdour	**Instructor's e-mail:**	bdour@hu.edu.jo
Office Hours:	12:00 – 01:00: Sun. & Tue. 2 hours lectures per week and 2 hrs Lab		

Course Description (catalog): is a three-credit lecture, problem set, lab, and exam course. In this course, we'll cover the fundamentals of environmental engineering. These fundamentals will serve you well as a future environmental engineer, a future civil engineer, or in any profession in which the environment is a concern. In the *lectures*, I'll present concepts and applications spanning the whole range of environmental engineering. We'll spend time solving simple versions of problems you'll see in the problem sets.

Textbook(s) and/or Other Supplementary Materials:
Mihelcic, Zimmerman: Environmental Engineering: Fundamentals, Sustainability, Design, 2nd Edition
References: Introduction to Environmental Engineering by Richard O. Mines and Laura W. Lackey Prentice Hall, 2009
Masters, Introduction to Environmental Engineering and Science, Prentice- Hall

Major Topics Covered:

Topic		No. of Weeks	Contact hours*
Chapter 1	Introduction	2	4
Chapter 3	Physical, chemical and biological water quality parameters	2	4
Chapter 2	Solid waste management	1	2
Chapter 4	Environmental Chemistry In biological systems Chemistry of Pollutants	2	4
Chapter 5	Environmental Biology	1	2
Chapter 7	Air pollution	2	4
Chapter 6, Chapter 8	Environmental Risk Assessment	2	4
Chapter 9	Environmental Engineering Ethics	1	2
Chapter 10	Membrane Processes	**2**	**4**

*Contact hours include lectures, quizzes and exams

10:00 – 11:00: Sun. & Tue.
Lab: Sun. Tuesday., 02:00-04:00

Specific Outcomes of Instruction (Course Learning Outcomes):
After completing the course, the student will be able to:

1. Define and describe the role of Environmental Engineers in identifying and solving problems related to the human interaction with the environment (including regulations development). **(1,2)**
2. Assess the impact of human activity on the environment (e.g. risk assessment). **(1,2)**
3. Explain the main concepts and principles that are used to understand and analyze problems related to Environmental and Water Resources Engineering (e.g. mass and energy balances, risk assessment, transport processes, water resources, design parameters, etc.). **(1,2)**

4. Illustrate the impact of engineered systems on the environment and apply current engineering technologies to protect the environment (water, air and soil). **(1,2)**
5. Think critically, behave ethically, and consider the technical and social consequences of their work, especially as it affects the health, safety, and environment of both ecological and human communities.**(4)**

Student Outcomes (SO) Addressed by the Course:

#	Outcome Description	Contribution
	General Engineering Student Outcomes	
(1)	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	M
(2)	an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	L
(3)	an ability to communicate effectively with a range of audiences.	
(4)	an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	M
(5)	an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.	
(6)	an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	
(7)	an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.	

Grading Plan:

Midterm (Theory)	Exam	30 Points
Midterm (Lab)	Exam	10 points
Lab Reports		10 points
Final exam (Theory)		40 Points
Final exam (Lab)		10 Points

General Notes: Many aspects of the course will receive on-going, real-time assessments and feedback to help improve students' performance. This will be done by discussing performance in class and by arranging individual meetings.

Prepared by: *Prof. Ahmed N Bdour* **Date:** 25 Feb. 2023