The Hashemite University
Faculty of Engineering
Civil Engineering Program
Course Syllabus

Course Title:	**Water and Wastewater Treatment**	**Course Number:110401554**
Designation:	Elective	**Prerequisite(s): 110404356, 110401455**
Instructor:	Eng. Suzan Albatayneh	**Instructor's e-mail:** suzan@hu.edu.o
Office Hours:		

Course Description (catalog): This course nourishes the student with basic understanding of the characterization process of water and wastewater streams and the selection of best available treatment methods. Apply theories and knowledge gained from previous courses in water resources and environmental engineering in the design of municipal water and wastewater treatment plants. Design of physical, chemical and biological treatment units; sewers; sludge processing and disposal units; water reuse; and advanced treatment units.

Textbook(s) and/or Other Supplementary Materials:

1- Environmental Engineering A Design Approach by A.P. Sincero and G. A. Sincero.

2- Introduction to Environmental Engineering and Sciences by G. M. Masters.

3- Introduction to Environmental Engineering by M. L. Davis and D. A. Cornwell.

References:

1- Physicochemical Processes for Water Quality Control by W.J. Weber, Jr.

Major Topics Covered:

Topics	No. of Weeks	Contact hours*
Characterization of Water and Wastewater	1	3
Guide to selection of Water Treatment Processes	1	3
Water supply and Distribution	1	3
Unit Operation of Water Treatment , Sedimentation, Filtration, Coagulation	2	6
Water Softening	1	3
Conventional Wastewater Treatment , Primary Treatment, Secondary Treatment, Tertiary Treatment	3	9
Sludge Treatment and Disposal	1	3
Advanced Treatment, Carbon Adsorption , Membrane Processes	2	6
Infiltration/Inflow	1	3
Water Reuse	1	3
Disinfection	1	3
Total	**15**	**45**

*Contact hours include lectures, quizzes and exams

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

3- Understand water and wastewater quality parameters and its application to characterize the different water streams.(a, e, j, k)

4- Select water and wastewater treatment processes. .(a, e, j, k)

5- Design of Water Supply and Distribution Systems, and Sewage Networks. (a, c, e)

6- Design of Units of Operation of Water Treatment including, but not limited to, units for sedimentation, filtration, coagulation, water softening, disinfection. (a, c, e)

7- Design of primary, secondary, sludge treatment and disposal, water reuse, and advanced wastewater treatment units. (a, c, e)

Student Outcomes (SO) Addressed by the Course:

#	Outcome Description	Contribution
	General Engineering 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	
(c)	an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	
(d)	an ability to function on multidisciplinary teams	
(e)	an ability to identify, formulate, and solve engineering problems	
(f)	an understanding of professional and ethical responsibility	
(g)	an ability to communicate effectively	
(h)	the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	
(i)	a recognition of the need for, and an ability to engage in life-long learning	
(j)	a knowledge of contemporary issues	
(k)	an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	
	H=High, **M**= Medium, **L**=Low	

Grading Plan:

1st Exam	30 Points
2nd Exam	30 Points
Final exam	40 points

General Notes: Beware of Plagiarism: copying and handing in for credit someone else's work
Any plagiarism case will result in an automatic 'F' for the course

Prepared by: Eng. Suzan Albatayneh **Date: 24th April** 2018