



Jordan University of Science and Technology
Faculty of Science & Arts
Chemistry Department

CHEM790 Special Topics In Applied Chemistry

First Semester 2017-2018

Course Catalog

3 Credit Hours. The course covers of the application of chemistry in potable water treatment and wastewater treatment and reclamation. Provides and application of physical, biological and chemical processes in the removal of impurities and pollutants. It also covers Advanced Water Treatment Processes - Ion Exchange, Ozonation, Adsorption, Ultra Filtration, Membrane Processes, UV Disinfection, nanotechnology

Text Book

Title	MontgomeryWastonHarza (Firm)MWH."Water Treatment: Principles and Design"
Author(s)	Kerry J. Howe, David W. Hand, George Tchobanoglous, R. Rhodes Trussell, John Crittenden
Edition	2nd Edition
Short Name	1
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
2	Environmental Engineering and Science	Gilbert Masters and Wendell Ela	3rd Edition	
3	Water and Wastewater Technology	? Hammer, M. J. and Hammer, M. J. Jr.	5th Edition	
4	Handouts	N/A	1st Edition	

Instructor

Name	Dr. Muna Abu-Dalo
Office Location	N1-L-1

Office Hours	Sun : 09:30 - 10:30 Mon : 11:30 - 13:30 Wed : 13:30 - 14:30 Thu : 11:30 - 13:30
Email	maabudalo@just.edu.jo

Class Schedule & Room
Section 1: Lecture Time: Sun, Thu : 13:30 - 15:00 Room: M1305

Tentative List of Topics Covered		
Weeks	Topic	References
Week 1	Water quality requirement	Handouts From 4
Week 2	Overview of Water Treatment Process	Handouts From 4
Week 3	Review Reaction Kinetics Material Balances Analysis of Performance of Reactors	Ch. 1 & Ch. 6 From 1
Week 4	More material Balance. Reactor configuration	Ch. 1 & Ch. 6 From 1
Week 5	Water Treatment Processes: treatment objectives, coagulation,	Ch. 7 & Ch. 9 From 1
Week 6	Water Treatment Processes: Mixing and flocculation	Ch.7 & Ch. 9 From 1
Week 7	Water Treatment Processes: Ion exchange , softening	Ch. 6 From 1
Week 8	Water Treatment Processes: Sedimentation and dissolved air floatation	Ch. 10 From 1
Week 9	Water Treatment Processes: Filtration	Ch. 11 From 1
Week 10	Water Treatment Processes: adsorption	Ch. 15 From 1
Week 11	Water Treatment Processes: Disinfection	Ch. 13 From 1
Week 12	Wastewater Treatment Processes	Ch. 6 From 1
Week 13	Advanced Treatment Process : Desalination , Nanotechnology in water treatment	Handouts From 4
Week 14	Case Studies	

Mapping of Course Objectives to Program Student Outcomes ¹	Assessment method
Utilize knowledge in chemistry, physics, and microbiology to understand the characteristics of drinking water, municipal and industrial wastewater and the principles of processing of water, wastewater and resultant sludge [1a, 1e, 1f, 1h, 1k]	
Describe different unit operations and treatment processes with mathematical equations [1a, 1e, 1k]	
To use fundamental knowledge in sciences to solve a real-world problem [1a, 1e, 1f, 1h]	
Communicate by both writing and presentation clearly and concisely [1g, 1h, 1j, 1k]	

Relationship to Program Student Outcomes (Out of 100%)										
a	b	c	d	e	f	g	h	i	j	k
17.83				17.83	14.50	5	19.50		5	20.33

Policy	
Make-Up Exams	Make-up exams will be offered for valid reasons only with consent of the Dean. Make-up exams may be different from regular exams in content and format.
Attendance	Lecture attendance is mandatory. Student is allowed maximally 20% absentia of the total module hours. More than this percentage, student with an excuse will be drawn from the module. Otherwise, student will be deprived from the module with zero mark assigned.

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