



Program: B.Sc.

Academic Year: (/)

Semester: Semester

- **CHE0905574: Hazardous Waste Management**
- **Course Catalog (2019)**

Hazardous wastes regulatory framework and international conventions. Hazardous waste sources, properties and classification, storage, transport, fate and transport of contaminants. Hazardous waste minimization and pollution prevention options. Hazardous waste treatment technologies and remediation processes, as well as, safe disposal of hazardous waste. Management of non-conventional hazardous wastes (medical waste, etc).

Credit hours	3	Level		Pre-requisite(s)	0915471
Instructor Dr. Motasem Saidan		Office number CHE303		Office phone Ext. 22893	
Course website https://elearning.ju.edu.jo/login/index.php		E-mail m.saidan@ju.edu.jo		Place Refer to Registration website	

▪ **Textbook:**

1. William Worrell & P. Aarne Vesilind, Solid Waste Engineering, 2012.
2. George Tchobanoglous, Handbook of Solid Waste Management, 2002
3. Instructor Handouts.

▪ **References:**

1. Davis, M.L. and Cornwell, D.A. "Introduction to Environmental Engineering", McGraw-Hill, N.Y., 4th edition or later.

▪ **Learning Objectives and Intended Learning Outcomes**

Objectives	Outcomes
1. Gaining knowledge in solid waste concepts, definitions, and components	1.1 Know the basic knowledge of waste definitions, materials and waste flow in society and industrial systems O3, O7 1.2 Define, identify, classify, and characterize the solid waste O1
2. Basic understanding of integrated solid waste management.	2.1 Understand the basic principles of waste generation, collection, movement and transfer, and disposal O2 2.2 know the basic waste minimization practices: 4Rs,..etc O4
3. Fundamental understanding of landfill design	3.1 Demonstrate ability to design and propose a landfill based on population growth rate and waste generation rate O2 , 3.2 Understand the key biochemical transformations of solid waste O2
4. Model developing of biogas potential production from the landfill	4.1 Demonstrate ability to build mathematical model to estimate the feasibility of LFG potential for direct-use or electricity generation in the landfill O1, O2
5. Develop the skills needed to successfully	5.1 apply knowledge from general science and engineering courses to



design waste collection and collection routing.	propose efficient collection trips and routing O7
6. Become familiar with the regulatory and institutional framework concerning waste management and policy	6.1 gain insight to the socio-economic assessment of the local waste management system and policy O3 6.2 Communicate with the local communities by interviewing and questionnaire gathering O3

▪ **Topics Covered**

Lectures	Topics	Reference
1	Introduction & Syllabus	Handouts, Textbook
3	Solid waste definition, concepts, and characterizations	Handouts, Textbook,
5	Solid waste chemical, physical, and biological characterization	Handouts, Textbook,
3	Solid waste generation and quantities	Handouts, Textbook,
4	Solid waste collection and routings	Handouts, Textbook,
7	Landfills: General, planning, siting, and processes	Handouts, Textbook,
4	Socio-economic assessment of SWM systems in Jordan: Questionnaire designing and data gathering, assessment, and reporting	
4	Landfills: Leachate quantity	Handouts,
5	Landfills: LFG and biogas potential productions; mathematical modeling	Handouts, Textbook,
4	Waste Biochemical processes: aerobic, anaerobic, and composting	Handouts, Textbook,
5	Landfill Design	Handouts, Textbook

▪ **Evaluation**

Evaluation Tool	Weight	Date
Midterm Exam	30	Will be announced by the department
Projects, Case studies, activities	30	Will be arranged between the 5 th and 16 th weeks
Final Exam	40	Will be announced by the University

▪ **Intended Scale**

F	D-	D	D+	C-	C	C+	B-	B	B+	A-	A

▪ **Relationship to Program Outcomes (%)**

O1	O2	O3	O4	O7						

▪ **Relationship to CHE Program Objectives**



PEO1	PEO2	PEO3	PEO4	PEO5	PEO6	PEO7	PEO8	PEO9	PEO10	PEO11
√	√	√	√	√						

▪ **Document Control**

Prepared by	Dr. Motasem Saidan
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