



Course Specifications

Course Title:	Municipal Solid Waste Management
Course Code:	ENS 362
Program:	Environment Sciences and Technology
Department:	Environmental Sciences Department
College:	Faculty of Meteorology, Environment and Arid Land Agriculture
Institution:	King Abdulaziz University

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A. Course Identification

1. Credit hours: 3
2. Course type a. University <input type="checkbox"/> College <input checked="" type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/> b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered: 6 th /3 rd Year
4. Pre-requisites for this course (if any): ENS 207, ENS 305
5. Co-requisites for this course (if any): None

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	4	100 %
2	Blended	-	-
3	E-learning	-	-
4	Distance learning	-	-
5	Other	-	-

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	45
2	Laboratory/Studio	-
3	Tutorial	-
4	Others (specify)	-
	Total	45

B. Course Objectives and Learning Outcomes

1. Course Description

This course focuses on the basics of environmental sciences. It provides an introduction to specialized environmental sciences focusing on environmental pollution of various environmental mediums. It also links the exposure to environmental to pollution to health impact on man and environment.

2. Course Main Objective

By the end of the course the student should be able to:

- Know the basic concepts and terminology of the environment.
- Recognize the atmospheric systems & the biogeochemical cycles of the basic components of the environment.
- Define the environmental pollution & know its types, causes, effect, and ways to reduce it.
- Future of the environment in the Kingdom through the Saudi vision 2030 & the National environment strategy.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding	
1.1	The student will understand the generation mechanism of municipal solid waste,	
1.2	Will be able to outline municipal solid waste management practices (collection, transportation, treatment, and disposal)	
1.3	Recognize the importance of recycling	
2	Skills :	
2.1	Recognizes the difference in quantity and characteristics of waste generated at different sources.	
2.2	Select the appropriate method of management for different environment.	
2.3	Inspection of closed facilities.	
3	Values:	
3.1	Demonstrate independent role and as part of a team.	
3.2	Participate actively in a team.	
3.3	Analyze and discuss results of assignments	

C. Course Content

No	List of Topics	Contact Hours
1	Reviewing regulations related to solid waste management	1
2	Environmental and health problem associated with municipal solid waste management.	2
3	Solid waste generation	1
4	Quantity and characteristics of solid waste	2
5	Solid waste collection and transportation	4
6	Physical, chemical, and biological treatment methods	12
7	Sanitary landfill and other disposal methods	3
8	Air and groundwater pollution associated with landfills	2
9	Monitoring closed landfills and other facilities	1
10	Recycling	3
11	Recovery of energy from solid waste	2
12	National Environment Strategy; its relation to environmental sciences and the future of employment in both governmental and private	3

	sectors.	
Total		36

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		
1.1	Understand the generation mechanism of municipal solid waste,	<ul style="list-style-type: none"> • In-class lectures, using data show, with handouts. • Class discussion. • Using data show to display photos, audio clips and videos from the Internet 	<ul style="list-style-type: none"> • Short reports. • homework assignments • Periodic quizzes and the mid-term and final exams
1.2	Outline municipal solid waste management practices (collection, transportation, treatment, and disposal)	" " " " "	" " " " "
1.3	Recognize the importance of recycling	" " " " "	" " " " "
2.0	Skills		
2.1	Recognizes the difference in quantity and characteristics of waste generated at different sources.	<ul style="list-style-type: none"> • In-class assignments • Class discussion. • Visiting of a local facility 	<ul style="list-style-type: none"> • Short reports. • homework assignments • Periodic quizzes and the mid-term and final exams
2.2	Select the appropriate method of management for different environment.	" " " " "	" " " " "
2.3	Inspection of closed facilities.	" " " " "	" " " " "
3.0	Values		
3.1	Demonstrate independent role and as part of a team.	In-class joint assignments	How a student cooperates with mates in assigned tasks
3.2	Participate actively in a team.	In-class joint assignments	" " " " "
3.3	Analyze and discuss results of assignments	In-class joint assignments	" " " " "

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Students are usually assessed via quizzes, homework assignments	3rd, 7th , 13th weeks	15%

#	Assessment task*	Week Due	Percentage of Total Assessment Score
2	Term project individual or group projects including a written report and an oral presentation	12th	15%
3	Midterm exam	6th	25%
4	Final exam	TBA	45%

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

Office hours 6 h / week

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	Andrew Friedland; Rick Relyea (2019) Environmental Science for the AP® Course 3rd Edition, ISBN-13: 978-1319113292
Essential References Materials	Vision 2030 Overview - Vision 2030 المنهجية والأهداف الاستراتيجية (mewa.gov.sa)
Electronic Materials	https://www.iswa.org/?v=3dd6b9265ff1
	https://www.thebalancesmb.com/an-introduction-to-solid-waste-management-28
	https://www.worldbank.org/en/topic/urbandevelopment/brief/solid-waste-manage
	https://datatopics.worldbank.org/what-a-waste/trends_in_solid_waste_managemen
	https://www.ecomena.org/solid-waste-management-in-saudi-arabia/
	https://dnr.mo.gov/env/swmp/
	https://swana.org/
	https://www.coursera.org/learn/solid-waste-management
	Handbook of Solid Waste Management, Second Edition by George Tchobanoglo
	The Solid Waste Handbook: A Practical Guide 1st Edition by William D. Robins
	Guide to Hazardous Materials and Waste Management Risk, Regulations, Respon
	by Karen Hardt
	The Solid Waste Handbook: A Practical Guide 1st Edition by William D. Robins

Other Learning Materials	Handouts during class

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	- Lecture room with max 20 seats. - Laboratory with a capacity of not less than 20 seats.
Technology Resources (AV, data show, Smart Board, software, etc.)	Data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Equipment and illustration tools related to the course topics.

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Course contents covering	Students (direct through meetings, or indirect using the central online questionnaires)	Online questionnaire and Students- faculty meetings (advisory committee)
Quality of teaching	" " " " "	Online questionnaire and students- faculty meetings (advisory committee)
Office hours commitment	" " " " "	Online questionnaire and Students- faculty meetings (advisory committee)

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	END Dept. Council and Faculty Academic Accreditation Committee
Reference No.	
Date	April 26, 2021