

Course Specifications

Course Title:	إدارة المخلفات الصلبة الصناعية Industrial Solid Wastes	
Course Code:	ENS 466	
Program:	Environmental Sciences and Technology Program	
Department:	Environmental Sciences	
College: Faculty of Meteorology, Environment and Arid Land Agriculture		
Institution:	King Abdulaziz University	







Table of Contents

A. Course Identification	
6. Mode of Instruction (mark all that apply)	3
B. Course Objectives and Learning Outcomes	
1. Course Description	3
2. Course Main Objective	4
3. Course Learning Outcomes	4
C. Course Content	
D. Teaching and Assessment5	
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods	5
2. Assessment Tasks for Students	5
E. Student Academic Counseling and Support6	
F. Learning Resources and Facilities	
1.Learning Resources	6
2. Facilities Required	6
G. Course Quality Evaluation6	
H. Specification Approval Data7	

1

A. Course Identification

1.	Credit hours: 2 h		
2.	Course type		
a.	University College Department x Others		
b.	Required Elective x		
3.	Level/year at which this course is offered: 8 th Level / 4 th Year		
4.	4. Pre-requisites for this course (if any): ENS 362		
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		
2	Blended		60%
3	E-learning		40%
4	Correspondence		
5	Other		

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours	
Contac	et Hours		
1	Lecture	30 h	
2	Laboratory/Studio		
3	Tutorial		
4	Others (specify)		
	Total	30 h	
Other Learning Hours*			
1	Study		
2	Assignments		
3	Library	4 h	
4	Projects/Research Essays/Theses		
5	Others (specify)		
	Total		

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

1 Topics to be Covered		
Торіс	No of Weeks	Contact hours
Introduction on industrial solid wastes- Definitions	2	4

Industrial solid wastessources and characterization	3	6	
Industrial wastewater management within the industry	3	6	
Processes of industrial solid wastes treatment	4	8	
Value add products from the industrial solid wastes	3	6	
	15	30	

2. Course Main Objective

The main purpose for this course is:

- Identify the pollution load of municipal and industrial wastewater
- Explain methods of wastewater treatment
- Select the suitable management method

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	Knowledge:	
1.1	Listing of wastewater analysis methods.	
1.2	Listing of wastewater treatment methods	
1.3		
1		
2	Skills :	
2.1	Explain the proper method of analytical instruments for measuring pollutants.	
2.2	Expectation of wastewater characteristics of different industries	
2.3	Selection the suitable management method	
2		
3	Competence:	
3.1	Judge independently and as part of a team.	
3.2	Use resources and time with other members of the group.	
3.3	Show results of work to others.	
3		

C. Course Content

No	List of Topics	Contact Hours
1	Introduction on industrial solid wastes- Definitions	4
2	Industrial solid wastessources and characterization	6
3	Industrial wastewater management within the industry	6
4	Processes of industrial solid wastes treatment	8
5	Value add products from the industrial solid wastes	6
	Total	30 h

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			
1.1	list, name, record, define, label, outline, state,	•Involvement of students in active discussion about topics.		In class short quizzes.Midterm, and final exams.
1.2	describe, recall, memorize, reproduce, recognize, record, tell, write	 Providing an opportunity for students to apply what they learn in the classroom to real-life experiences. Homework assignments. 		In class short quizzes.Midterm and
2.0	Skills			
2.1	estimate, explain, summarize, write, compare, contrast, diagram, subdivide, differentiate, criticize, calculate, analyze, compose, develop, create, prepare, reconstruct,	 Homework assignments Problem solving. Laboratory experiments. 		 In class short quizzes Midterm, practical, and final exams Checking the problems solved in the homework assignments.
2.2	reorganize, summarize, explain, predict, justify, rate, evaluate, plan, design, measure, judge, justify, interpret, appraise	 Homework assignments Problem solving. Laboratory experiments. 		 In class short quizzes Midterm, practical, and final exams Checking the problems solved in the homework assignments.
3.0	Competence			
3.1	demonstrate, judge, choose, illustrat modify, show, use, appraise, evaluat justify,	e, 1-W e, 2-S gro	Vriting group reports olving problems in ups.	Grading homework assignments
3.2	analyze, question, and write	1-Writing group reports 2-Solving problems in groups.		Grading homework assignments

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Class activities (in class quizzes, and homework)	Weekly	20%
2	Midterm exam	8	40%
3	Final exam	16	40%
4			
5			
6			
7			
8			

*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 4h/ week

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Handbook of Industrial and Hazardous Wastes Treatment, sec. edition, <i>Edited By Lawrence K. Wang</i> , et al. (2004), CRC Press.		
Essential References Materials	Industrial Solid Waste Management and Landfilling Practice. <u>Editors: B.K. Guha, Manoj Datta, B. P. Parida</u> (1999) Narosa Publishing House, ISBN: 8173193177, 9788173193170.		
Electronic Materials	Websites on the internet that are relevant to the topics of the course		
Other Learning Materials	Computer-based programs/CD, professional standards or regulations and software.		

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Lecture room with max 30 seats
Technology Resources (AV, data show, Smart Board, software, etc.)	AV, data show, Smart Board, software, etc.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Equipment and illustration tools relevant to the course material

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Strategies for Obtaining Student Feedback on Effectiveness of Teaching	Course evaluation by studentStudents- faculty meetings	Direct
Strategies for Evaluation of Teaching by the Program/Department Instructor	 Departmental council discussions Discussions within the group of faculty teaching the course 	Direct

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Processes for Improvement of Teaching	 Attending workshops given by experts on the teaching and learning methodologies. Periodical departmental revisions of its methods of teaching 	Direct
Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution)	Providing samples of all kind of assessment in the departmental course portfolio of each course	Direct, Indirect
Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.	 The course material and learning outcomes will be periodically reviewed and the changes to be taken are approved in the departmental and higher councils. The head of department and faculty take the responsibility of implementing the proposed changes. 	Direct, Indirect

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	Prof. Mohamed Barakat
Reference No.	
Date	April 2021