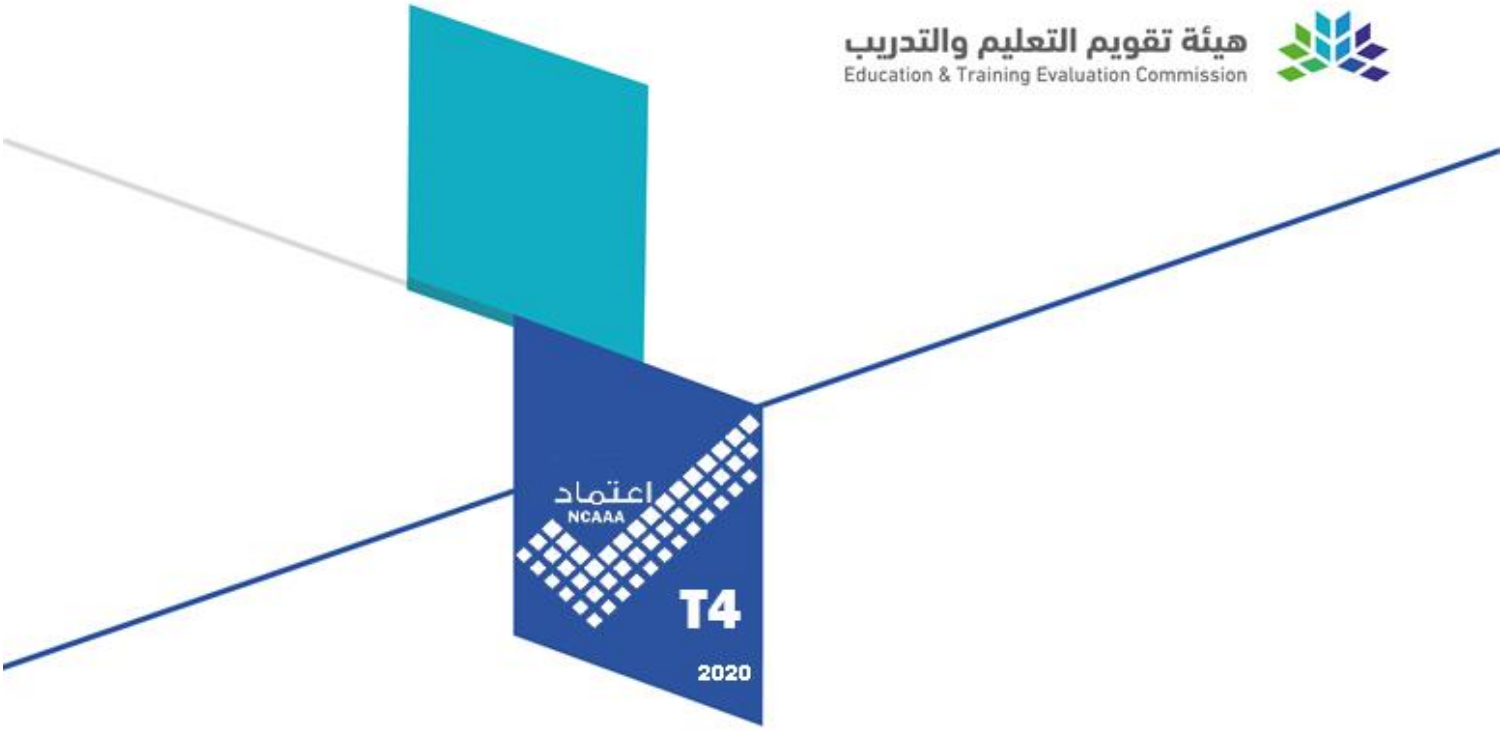
هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission



Course Specifications

Course Title:	Environmental Chemistry
Course Code:	4024574-2
Program:	Chemistry
Department:	Chemistry
College:	Faculty of Applied Science
Institution:	Umm Al-Qura University

Table of Contents

A. Course Identification

1. Credit hours: **2hrs** (theoretical)
2. Course type **a.** University ☐ College ☐ Department ■ Others ☐ **b.** Required ■ Elective ☐
3. Level/year at which this course is offered: **6th level / 3rd year**
4. Pre-requisites for this course (if any)**:** **Separation technique and Thermal analysis**
5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	√	73%
2	**Blended**		
3	**E-learning**	√	27%
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	24
2	**Laboratory/Studio**	-
3	**Tutorial**	-
4	**Others (E-Learning +Exams +Office hours)**	10
	Total	**34**

B. Course Objectives and Learning Outcomes

1. Course Description

The course deals with the principles of environmental chemistry. This includes the study of the effect of the chemical species and their processes on environment, air and water pollutions and soil chemical analysis process.

2. Course Main Objective

By the end of this course the students will:

1- **Have information about the basis of environmental chemistry**
2- **Familiar with air and water pollutions.**
3- **Gain basic information on soil analysis**

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	**Recognize the principle of environmental chemistry and related chemical species.**	**K1**
1.2	**Demonstrate the different types of environmental pollutions**	**K2**

CLOs		Aligned PLOs
1.3	Outline the recent developments in environmental analysis and their impacts to the environment.	K3
2	Skills :	
2.1	Explain the sources of the different types of pollution in the environment	S1
2.1	Classify the types of chemical pollutions on environment.	S2
2.3	Discuss different strategies in controlling environmental pollutions.	S2
2.4	Communicate effectively using theoretical basis of forensic analysis to a variety of audiences	S4
2.5	Collect data and perform statistical analysis for a given analytical data	S5
3	Values:	
3.1	Write and present a chemical report related to environmental chemistry.	V2
3.2	work individually and in a team to prepare a report on environmental analysis	V3

C. Course Content

No	List of Topics	Contact Hours
1	Introduction.	2
2	Principles of environmental chemistry and chemical analysis.	4
3	Eneregy and energy cycles and gases cycles.	2+2E
4	Role of human in environmental pollution.	2+2E
5	Atmosphere chemistry.	2
6	Air pollution (classification-sources –problems-global warming phenomenon).	2E
7	Mid-term exam	2
8	Water treatment chemistry.	4
9	Water pollution (water quality- types of contaminants- water pollution control).	4
10	Soil chemical analysis.	2
Total		**30**

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	Recognize the principle of environmental chemistry and related chemical species.	Lecture + dissections	Exams +essays
1.2	Demonstrate the different types of environmental pollutions	Lecture+ dissections E-Learning	Exams+ essays

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.3	**Outline the recent developments in environmental analysis and their impacts to the environment.**	Lecture+ dissections	Exam + essays
2.0	**Skills**		
2.1	**Explain the sources of the different types of pollution in the environment**	Lecture+ discussion	Exam + essays
2.1	**Classify the types of chemical pollutions on environment.**	Lecture+ discussion	Exam + essays
2.3	**Discuss different strategies in controlling environmental pollutions.**	Cooperative learning and Group Presentations	Report and research on Project production
2.4	**Communicate effectively using theoretical basis of forensic analysis to a variety of audiences**	E-learning	Active participation of students within their group on blackboard
2.5	**Collect data and perform statistical analysis for a given analytical data**	Self-Directed private Study	Assignments and activities
3.0	**Values**		
3.1	**Write and present a chemical report related to environmental chemistry.**	Class discussion	Presentations Or volunteering
3.2	**work individually and in a team to prepare a report on environmental analysis**	Class discussion based on articles	report

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Assignments and activities	All Weeks	10%
2	E-learning	All Weeks	10%
3	Mid-term Exam.	6	30%
4	Final Exam (2huors exam)	12	50%
Total			**100%**

***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 : • We have faculty members to provide counseling and advice. • Office hours: During the working hours weekly. • Academic Advising for students

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	• Stanley E. Manahan, ***ENVIRONMENTAL SCIENCE, TECHNOLOGY, AND CHEMISTRY,*** 2000, CRC Press LLC. • **Donald L. Sparks**, ***Environmental Soil Chemistry***, 2nd Edition, Academic Press (2003).
Essential References Materials	Lecture handouts available on the coordinator website.
Electronic Materials	• **http://www.chemweb.com** • **http://www.sciencedirect.com** • **http://www.rsc.org**
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	• Classrooms capacity (30) students. • Providing hall of teaching aids including computers and projector.
Technology Resources (AV, data show, Smart Board, software, etc.)	Room equipped with computer and projector and TV.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	No other requirements.

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Extent of achievement of course learning outcomes.	Program Leaders	Direct
Quality of learning resources.	Student	Indirect
Effectiveness of teaching and assessment.	Peer Reviewer	Direct

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	Quality committee and department counsel
Reference No.	1st meeting
Date	2022

Head of Chemistry Department

Dr Moataz Morad