



# Course Specifications

<b>Course Title:</b>	<b>Environmental chemistry</b>
<b>Course Code:</b>	<b>4024574-2</b>
<b>Program:</b>	<b>Chemistry and Industrial Chemistry</b>
<b>Department:</b>	<b>Chemistry</b>
<b>College:</b>	<b>Faculty of Applied Science</b>
<b>Institution:</b>	<b>Umm Al-qura University</b>



## Table of Contents

<b>A. Course Identification</b> .....	<b>3</b>
6. Mode of Instruction (mark all that apply) .....	3
<b>B. Course Objectives and Learning Outcomes</b> .....	<b>3</b>
1. Course Description .....	3
2. Course Main Objective.....	4
3. Course Learning Outcomes .....	4
<b>C. Course Content</b> .....	<b>4</b>
<b>D. Teaching and Assessment</b> .....	<b>5</b>
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods .....	5
2. Assessment Tasks for Students .....	5
<b>E. Student Academic Counseling and Support</b> .....	<b>6</b>
<b>F. Learning Resources and Facilities</b> .....	<b>6</b>
1. Learning Resources .....	6
2. Facilities Required.....	6
<b>G. Course Quality Evaluation</b> .....	<b>6</b>
<b>H. Specification Approval Data</b> .....	<b>7</b>

## A. Course Identification

<b>1. Credit hours:</b> Two
<b>2. Course type</b>
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input type="checkbox"/> Elective <input checked="" type="checkbox"/>
<b>3. Level/year at which this course is offered:</b> 6 <sup>th</sup> level / 3 <sup>rd</sup> year
<b>4. Pre-requisites for this course (if any):</b> Separation tech and thermal analysis
<b>5. Co-requisites for this course (if any):</b> –

## 6. Mode of Instruction (mark all that apply)

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

## 7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
<b>Contact Hours</b>		
1	Lecture	30
2	Laboratory/Studio	
3	Tutorial	
4	Others (specify)	
	<b>Total</b>	30
<b>Other Learning Hours*</b>		
1	Study	30
2	Assignments	
3	Library	15
4	Projects/Research Essays/Theses	
5	Others (specify)	
	<b>Total</b>	45

\* 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

The students will be mentioned to prepare an essay or a report from literature using the library, data base services, and/or websites to follow up and update the new topics of the subject of the course

## 2. Course Main Objective

By the end of this course the students will

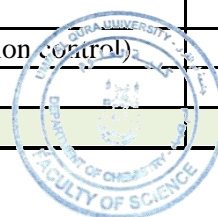
- 1- Have all information about the basis environmental chemistry
- 2- Familiar with air, water and soil pollution
- 3- Gases cycle in the atmosphere

## 3. Course Learning Outcomes

CLOs		Aligned PLOs
<b>1</b>	<b>Knowledge:</b>	
1.1	Recognize the meaning of environment and methods in analytical chemistry related to the pollution	K1
1.2	Identify the principles of energy resources	K1 & K5
1.3	Know the principles of energy cycles	K1
1.4	Describe some gases cycles	K4
1.5	Familiar with global warming phenomenon	K1
1.6	Select the proper method of analysis	K5
1.7	Name the different classes of air, water and soil pollution	K5
1.8	Determine principles of atmosphere chemistry	K5
<b>2</b>	<b>Skills :</b>	
2.1	Apply analytical methods in environmental pollution	S1
2.2	Compare different types of pollutions	S2
2.3	Explain the principles air, water and soil pollutions	S1
2.4	Analyze control methods for water , air and soil pollutions	S1 & S7
2.5	Summarize the principles of atmosphere chemistry	S2
<b>3</b>	<b>Competence:</b>	
3.1	Appraise the treatments for pollution in analytical chemistry	C1
3.2	Ability to analysis water, air and soil samples	C3
3.3	Scientific writing and use his/her observations to solve problems.	C2
3.4	Doing research and conduct searches for restoring information.	C3

## C. Course Content

No	List of Topics	Contact Hours
1	Introduction	2
2	Principles of environmental chemistry and chemical analysis	4
3	Energy and energy cycles and gases cycles	4
4	Role of human in environmental pollution	4
5	Atmosphere chemistry	2
6	Air pollution (classification-sources –problems-global warming phenomenon)	4
7	Water treatment chemistry	4
8	Water pollution (water quality- types of contaminants- water pollution control)	4
9	Soil chemical analysis	2
<b>Total</b>		<b>30</b>



## D. Teaching and Assessment

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

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
<b>1.0</b>	<b>Knowledge</b>		
1.1	Recognize the meaning of environment and methods in analytical chemistry related to the pollution	Lectures and Library visits	Quiz
1.2	Identify the principles of energy resources	Lectures and Library visits	Quiz
1.3	Know the principles of energy cycles	Lectures and Library visits	Exam
1.4	Describe some gases cycles	Lectures and Scientific discussion	Exam
1.5	Familiar with global warming phenomenon	Scientific discussion	long and short essays
1.6	Select the proper method of analysis	Scientific discussion Web-based study	Exam
1.7	Name the different classes of air, water and soil pollution	Scientific discussion Web-based study	Exam
1.8	Determine principles of atmosphere chemistry	Scientific discussion Web-based study	Exam
<b>2.0</b>	<b>Skills</b>		
2.1	Apply analytical methods in environmental pollution	Lectures	Exam
2.2	Compare different types of pollutions	Scientific discussion	Essays
2.3	Explain the principles air, water and soil pollutions	Scientific discussion and Lectures	Exam
2.4	Analyze control methods for water , air and soil pollutions	Lectures	Exam
2.5	Summarize the principles of atmosphere chemistry	Scientific discussion and Lectures	Long and short essays
<b>3.0</b>	<b>Competence</b>		
3.1	Appraise the treatments for pollution in analytical chemistry	Class discussion and research activity	Individual and group presentations
3.2	Ability to analysis water, air and soil samples	Lecture	Exam
3.3	Scientific writing and use his/her observations to solve problems.	Lecture	Web-based student performance systems
3.4	Doing research and conduct searches for restoring information.	Lecture, library visit, web-based study	Long and short essays

### 2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Homework or activities.	--	10 %
2	First midterm Exam.	8	20 %
3	Second midterm Exam.	14	20 %
4	Final Exam. (2hours Exam)	16	50 %
5	<b>Total</b>		<b>100 %</b>

\*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

2. List Essential References Materials (Journals, Reports, etc.)

- Lecture Hand outs available on the coordinator website

### 1. Learning Resources

<b>Required Textbooks</b>	<ul style="list-style-type: none"> <li>• Donald L. Sparks, <i>Environmental Soil Chemistry</i>, 2<sup>nd</sup> Edition, Academic Press (2003)</li> <li>• Stanley E. Manahan, <i>ENVIRONMENTAL SCIENCE, TECHNOLOGY, AND CHEMISTRY</i>, 2000, CRC Press LLC</li> </ul>
<b>Essential References Materials</b>	Lecture Handouts available on the coordinator website.
<b>Electronic Materials</b>	<ul style="list-style-type: none"> <li>• <a href="http://www.chemweb.com">http://www.chemweb.com</a></li> <li>• <a href="http://www.sciencedirect.com">http://www.sciencedirect.com</a></li> <li>• <a href="http://www.rsc.org">http://www.rsc.org</a></li> </ul>
<b>Other Learning Materials</b>	

### 2. Facilities Required

Item	Resources
<b>Accommodation</b> (Classrooms, laboratories, demonstration rooms/labs, etc.)	<ul style="list-style-type: none"> <li>• Classrooms capacity (30) students.</li> <li>• Providing hall of teaching aids including computers and projector.</li> </ul>
<b>Technology Resources</b> (AV, data show, Smart Board, software, etc.)	Room equipped with computer and projector and TV.
<b>Other Resources</b> (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

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Extent of achievement of course learning outcomes	Program Leaders	Direct
Quality of learning resources	Students	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	
Reference No.	
Date	2019 - 2020

Received by: Dr. Ismail Althagafi

Department Head

Signature:



Date: 20/12/2019

