

Petra University		
Faculty of arts and sciences		كلية الآداب والعلوم
Department of Chemistry		قسم الكيمياء

## Course Syllabus

Year: 2019/2020

Semester: First

Course No.	Course Title	Prerequisite	Co-requisite	Credit Hours/ ECT
101441	Environmental Chemistry	101241	-	3/ 5 ECT: European Credit Transfer System

Instructor Name	e-mail	Office No.	Office ext.	Office Hours
DR. ABDEL MNIM ALTWEIQ	aaltweiq@uop.edu.jo	7214	7214	Sun., Tues., Thurs.: 10 <sup>00</sup> -11 <sup>00</sup> and 13– 14 (Sun.), Mon and Wed.: 11 - 12

<b>Course Description</b>	This course covers the fundamental concepts of the five constituents of the environmental system; biosphere, hydrosphere, anthrosphere, geosphere and atmosphere.
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### Course Objectives

- To instill in students a sense of enthusiasm for environmental chemistry, an appreciation of its applications in different fields and to involve them in an intellectually stimulating and satisfying experience of learning and studying.
- To generate in students an appreciation of the importance of environmental chemistry areas in an industrial, economic and social context.
- to give the students an overview methods for prevention, control, measures and management of the pollution.

### Course Intended Learning Outcomes (ILOs) and their Alignment with Program ILOs:

Upon successful completion of this course, students are expected to achieve the following learning outcomes:

Course ILOs	Program ILOs	Teaching and Learning Method	Assessment Method
<b>Knowledge (K)</b>			
1. demonstrate knowledge and understanding of the chemical compositions of		Lectures and discussion	First, second and

atmosphere, hydrosphere, geosphere and anthrosphere (technology)	<b>K (1)</b>		final exams
2. demonstrate knowledge and understanding of effects and fates of chemical species in atmosphere, hydrosphere, geosphere.	<b>K (1)</b>		
<b>Intellectual Skills (I)</b>			
1. Write the chemical reactions that represent the interactions of chemical substances on the environmental system (air, water, soil, living things and technology).	<b>I (1)</b>	Lectures and discussion	First, second and final exams
<b>Transferable Skills (T)</b>			
1. achieved through goals mentioned in ILOs	<b>T (1)</b>		

### **Course Schedule:**

Week	Topics	Topic Details
1	Introduction and definitions	Environment, environmental chemistry, the interactions between the components of environmental system
2	Origin of the universe	Solar system, synthesis of elements
3-5	Cycles of matter	Bio-geo- chemical cycles; C-cycle, O-cycle, N-cycle, P-cycle and S-cycle
6, 7	The atmosphere	Fundamentals of atmospheric chemistry
8-11	The hydrosphere	Fundamentals of aquatic chemistry, unique properties of water, water quality parameters, water treatment and purification
12	The geosphere	Chemical composition of soil, chemical and physical properties of earth crust, weathering
13	The anthrosphere	Components and effects of anthrosphere
14	Green chemistry	The principles of green chemistry

### **Assessment Methods:**

Assessment method	Grade
First exam	25
Second exam	25
Project	10
Final exam	40

Total	100
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### **Alignment of Teaching and Learning Methods, Assessment and Course ILOs:**

Teaching method	Contact Hours	Assessed through	ILOs numbers
Lectures and Discussions	3	In-class problems, Exams	K1, I1, P1

### **Learning References:**

<b>1- Textbook (s):</b>
Principles of environmental chemistry, J. E. Girard, 3 <sup>ed</sup> ed., 2014
<b>2- References:</b>
Environmental chemistry, V. K. Ahluwalia, Ane books, 2008
Enviromental chemistry, S. E. Manaham, 8 <sup>th</sup> ed.,CRC press, 2007
<b>3- Other Resources:</b>
Course notes, data show facilities and Internet

### **Course Policies**

- Attendance Policy: University regulations apply to attendance.
- Academic Honesty: Academic dishonesty is an unacceptable mode of conduct, and will not be tolerated in any form at University of Petra. All persons involved in academic dishonesty and plagiarism in any form will be disciplined in accordance with University rules and regulations.

Approved by	Name	Date	Signature
Head of Department	Dr. Abdelmnim Altwaiq		
Faculty Dean	Prof. Rami Abdel Rahem		

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