

Course Syllabus

1.	Course Title	Environmental Analytical Chemistry
2.	Course Number	0333412
3.	Credit Hours (Theory, Practical)	3 (theory)
	Contact Hours (Theory, Practical)	3 (theory)
4.	Prerequisites/ Corequisites	0333311
5.	Program Title	B.Sc. Chemistry
6.	Program Code	0303
7.	School/ Center	The University of Jordan
8.	Department	Science
9.	Course Level	Chemistry
10.	Year of Study and Semester (s)	third Year 2023-2024
11.	Other Department(s) Involved in Teaching the Course	4 rd Year Students/2 nd semester 2023-2024
12.	Main Learning Language	English
13.	Learning Types	<input checked="" type="checkbox"/> Face to face learning <input type="checkbox"/> Blended <input type="checkbox"/> Fully online
14.	Online Platforms(s)	<input type="checkbox"/> Moodle <input checked="" type="checkbox"/> Microsoft Teams
15.	Issuing Date	2-8-2024
16.	Revision Date	2-8-2024

17 Course Coordinator:

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Office number: Chemistry 2nd floor
Email: s.fraihat@ju.edu.jo

Contact hours: 11:00-12:00 Mon. Wed.
Phone number:

**18 Other instructors:**

Name:

Office number:

Phone number:

Email:

Contact hours:

Name:

Office number:

Phone number:

Email:

Contact hours:

19 Course Description:

Environmental analytical chemistry (0303412) is an optional undergraduate chemistry course that covers certain areas in environmental chemistry which are within departmental policy. In this course students will learn about general terms and concepts related to environment, pollution, environmental pollutants, concepts and techniques of sampling (sample collection or portioning), sample preparation, and detecting, and measuring trace levels of typical environmental pollutants of concern. Advanced extractive methods and Data interpretation involved in environmental analysis.

20 Course aims and learning outcomes (CLOs):

A- Course Learning Outcomes: 0333412 Environmental Analytical chemistry

Upon successful completion of this course, students will be able to:

CLO1. the basic concepts of concentration units and molar calculations.

CLO2. key concepts of environmental chemistry principles and types of pollutants.

CLO3. basic and advanced methods of sampling and laboratory procedures used

CLO4. Investigate different types of analytical methods for environmental samples, spectroscopic, chromatographic and electrochemical.

CLO5. Understand advanced methods of analysis such as extractive and remote methods

SO-1. Graduates will be able to apply basic and scientific knowledge to identify, simple chemical calculations of concentration and converting units of concentration and analytical chemistry concepts.

SO-2. Graduates will be able to use their understanding of sampling methods of different types of environmental fields such as air, water and soil. And distinguish between homogeneous and heterogeneous samples.

SO-3. Graduates will be able to distinguish between different types of pollutants their sources, effects and the common analytical tools for their determination, this includes heavy metals, organic pollutants, nonmetals and other new pollutants.

SO-4.: Graduates will be able to investigate new analytical techniques that are used for sensitive and fast analysis. And understand methods of validation of analytical procedures.

SO-5. Ethics and Global Context: Graduates will understand and apply ethical and professional responsibilities in the context of the impact of technical and scientific solutions of environmental pollution problems and methods of solving these problems.

0333412 Environmental Analytical Chemistry

Student Outcomes (SO)

		SO-1	SO-2	SO-3	SO-4	SO-5	SO-6	SO-7
Course Learning Outcomes (CLO)	CLO-1	✓	✓					
	CLO-2	✓	✓					
	CLO-3	✓	✓					
	CLO-4	✓	✓					
	CLO-5	✓	✓					



•	Lecture	Topic	Student Learning Outcome	Learning Methods (Face to Face/Blended / Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
5	1.1	Introduction to analytical chemistry and pollution	CLO-1 CLO-2	Face to Face	Classroom		midterm exam, Final exam	
	1.2	Environmental pollutants, types and examples	CLO-1 CLO-2	Face to Face	Classroom		midterm exam, Final exam	Fundamentals of Environmental Sampling and Analysis. Zhang. 2007
2	2.1	soil sampling methods	CLO-1 CLO-2	Face to Face	Classroom		midterm exam, Final exam	Fundamentals of Environmental Sampling and Analysis. Zhang. 2007
	2.2	Types of sampling tools and methods of sampling soil	CLO-1 CLO-2	Face to Face	Classroom		midterm exam, Final exam	Fundamentals of Environmental Sampling and Analysis. Zhang. 2007
3	3.1	Types of sampling tools and methods of sampling water	CLO-1 CLO-2	Face to Face	Classroom		midterm exam, Final exam	Fundamentals of Environmental Sampling and Analysis. Zhang. 2007
	3.2	Pollutants in different types of water organic and inorganic	CLO-1 CLO-2	Face to Face	Classroom		midterm exam, Final exam	Fundamentals of Environmental Sampling and Analysis. Zhang. 2007
	3.3	Toxicity of water pollutants	CLO-1 CLO-2	Face to Face	Classroom		midterm exam, Final exam	Fundamentals of Environmental Sampling and Analysis. Zhang. 2007
4	4.1	Analytical methods for analysis common water pollutant	CLO-1 CLO-2	Face to Face	Classroom		midterm exam, Final exam	Fundamentals of Environmental Sampling and Analysis. Zhang. 2007
	4.2	Spectroscopic and	CLO-1 CLO-2	Face to Face	Classroom		midterm exam, Final exam	Fundamentals of Environmental Sampling and



	مركز الاعتماد وضمان الجودة ACCREDITATION QUALITY ASSURANCE CENTER	electrochemical methods						Analysis. Zhang. 2007
5	5.1	chromatographic methods application in water analysis	CLO-1 CLO-2	Face to Face	Classroom		midterm exam, Final exam	Fundamentals of Environmental Sampling and Analysis. Zhang. 2007
6	6.1	Extractive and micro extractive analytical methods	CLO-1 CLO-2	Face to Face	Classroom		Final exam	Fundamentals of Environmental Sampling and Analysis. Zhang. 2007
7	7.1	Application of analytical methods of analysis for inorganic	CLO-1 CLO-2	Face to Face	Classroom		Final exam	Fundamentals of Environmental Sampling and Analysis. Zhang. 2007
	7.2	Application of analytical methods of analysis for organic	CLO-1 CLO-2	Face to Face	Classroom		Final exam	Fundamentals of Environmental Sampling and Analysis. Zhang. 2007
	7.3	Advanced analytical methods	CLO-1 CLO-2	Face to Face	Classroom		Final exam	Fundamentals of Environmental Sampling and Analysis. Zhang. 2007
	8.1	Advanced analytical methods	CLO-1 CLO-2		Classroom		report	Fundamentals of Environmental Sampling and Analysis. Zhang. 2007

21. Topic Outline and Schedule:

22 Evaluation Methods:

Opportunities to demonstrate achievement of the SLOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	SLOs	Period (Week)	Platform
quizzes	30%	1-3	CLO-1 CLO-2 CLO-4 CLO-5	Three weeks	In the department and e-learning
Mid exam	30%	4-7	CLO-1 CLO-2 CLO-3 CLO-4	Three weeks	In the department
Final exam	50%	All unites	CLO-1 CLO-2 CLO-3 CLO-4 CLO-5 CLO-6	Seven weeks	In the department

23 Course Requirements

(e.g., students should have a computer, internet connection, webcam, account on a specific software/platform... etc.): Students should have a laptop internet connection.

24 Course Policies:

A- Attendance policies: A- Attendance policies:

A maximum of 15% absence is allowed.

B- Absences from exams and submitting assignments on time:

Incomplete Exams are conducted later after arranging a new date.

C- Health and safety procedures:

This is a theoretical course.

D- Honesty policy regarding cheating, plagiarism, and misbehavior:



The general Jordan University's laws are applied in any case of cheating.

E- Grading policy:

The letters scale is applied.

F- Available university services that support achievement in the course:

Free Internet access and E-learning.

25 References:

A- Required book(s), assigned reading and audio-visuals:

B- Recommended books, materials, and media:

26 Additional information:

Name of Course Coordinator: -----	Signature: -----	Date: -----

Head of Curriculum Committee/Department: -----	Signature: -----	

Head of Department: -----	Signature: -----	
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Head of Curriculum Committee/Faculty: -----	Signature: -----	
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Dean: -----	Signature: -----	