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## **COURSE Syllabus**

**Course Name: Special topics in analytical chemistry**

**Course Number: 11014138**

### General Course Information:

Course title	Special topics in analytical chemistry
Course number	11014138
Credit hours (theory, practical)	3
Contact hours (theory, practical)	3
Prerequisites/corequisites	Instrumental Analysis (2)11013235
Academic Program	Bachelor
Programcode	01
Awarding institution	Isra University
Faculty	Science
Department	Chemistry
Level of course	4
Academic year /semester	2019/2020- Second semester
Awarded qualification	Bachelor degree in Chemistry
Other department(s) involved in teaching the course	-
Language of instruction	English
Date of production/revision	February 2019-2020

### Course Coordinator:

Coordinator's Name: Dr. Abed Abdel Qader  
Office No.:  
Office Phone: 2607  
Office Hours:  
**Email:** abed.abdelqader@iu.edu.jo

### Other Instructors:

Instructor's Name:  
Office No.:  
Office Phone:  
Office Hours:  
Email:

### Course Description:

Advanced topics in the field of analytical chemistry, Instrumental analysis and chromatography, the lecturer chooses the appropriate topics that meet student's needs.

### Text Book: *Author(s), Title, Publisher, Edition, Year, Book website.*

Lecture notes and Assignments

**References:** *Author(s), Title, Publisher, Edition, Year, Book website.*

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### Course Educational Objectives (CEOs):

1.	To provide students with in-depth knowledge on selected topics in sample preparation techniques.
2.	Knowledge of quality assured sampling strategies, sampling and sample handling of evidence.
3.	Knowledge of sample preparation methods and understanding of how different methods are used based on sample characteristics and analyte properties.
4.	Understanding of sustainable resources from an analytical science perspective
5.	Evaluate and select analytical scientific approaches based on different situations and scenarios and discuss the analytical scientists' role in a sustainable society.

### Intended Learning Outcomes (ILO's):

1.	Intended Learning Outcomes (ILO's)	Relationship to CEOs	Contribution to PLOs
<b>A</b>	Knowledge and Understanding:		
A1	Able to gain in-depth theoretical and practical knowledge on various disciplines of analytical chemistry	1	a
A2	Apply method validation of an analytical method that includes sample preparation, separation and analysis	2	c
A3	Describe and compare different sampling and sample preparation methods for gases, liquids and solid samples, including environmental samples, biological and food samples	3	c
A4			
<b>B</b>	Intellectual skills:		
B1	Able to plan and design modern analytical methods on various analytical disciplines	4	d
B2			
B3			
<b>C</b>	Subject specific skills:		
C1	Perform literature search that is relevant to a specific analytical problem	5	i
C2			
<b>D</b>	Transferable skills:		
D1			
D2			

## Topic Outline and Schedule:

Topic	Weeks	Achieved ILOs
<b>Introduction</b> – <b>Sample preparation: an analytical perspective</b>	1,2	A1, A2
<b>Liquid-liquid Extraction</b>	3	A1, A3
<b>Solid phase Extraction</b>	4, 5	A1, A3
<b>Solid phase Microextraction</b>	6	A1, A3
<b>Liquid phase Microextraction</b>	6,7	A1, A3
<b>Molecularly imprinted polymer (MIP) adsorbent in SPE and SPME</b>	8,9	A1, A3
<b>Stir Bare Sorptive Extraction</b>	10	A1, A3
<b>Static Headspace Extraction</b>	11, 12	A1, A3
<b>Dynamic Headspace Extraction</b>	13, 14	A1, A3
<b>Oral presentation</b>	15	C1, B1
<b>Final exam</b>	16	

## Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:  
Lectures

## Course Policies:

### A- Attendance policies:

The maximum allowed absences is 15% of the lectures.

### B- Absences from exams and handing in assignments on time:

First Exam and second exam can be retaken based on approval of excuse by the instructor's discretion.

Not handing assignment on time will incur penalties.

### C- Academic Health and safety procedures

### D- Honesty policy regarding cheating, plagiarism, and misbehaviour:

Cheating, plagiarism, misbehaviour will result in zero grade and further disciplinary actions may be taken.

### E- Grading policy:

- All homework is to be posted online through the e-learning system.
- Exams will be marked within 72 hours and the marked exam papers will be handed to the students.

### F- Available university services that support achievement in the course: **Labs, Library.**

## Required equipment:

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## Assessment Tools implemented in the course:

<ul style="list-style-type: none"><li>✓ First Written Exam.</li><li>✓ Second Written Exam.</li><li>✓ Final Written Exam.</li><li><input type="checkbox"/> Quizzes.</li><li><input type="checkbox"/> Homework.</li><li><input type="checkbox"/> Integrative Projects.</li><li><input type="checkbox"/> Case Study.</li><li><input type="checkbox"/> Written Reports.</li><li><input type="checkbox"/> Participation in Lecture.</li><li><input type="checkbox"/> Practice in the Lab.</li><li>✓ Illustrative Presentations.</li><li><input type="checkbox"/> Oral Exams.</li><li><input type="checkbox"/> Others (identify):</li></ul>
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## Program Learning Outcome (PLOs):

Program Learning Outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the knowledge, skills, and behaviours that students acquire as they progress through the program. A graduate of the () program will demonstrate	
a.	Describe the fundamental scientific principles and theories across the four subfields of chemistry (Organic, inorganic, analytical and physical).
b.	Identify and confirm chemical compounds structures as well as determine chemical composition.
c.	Establish and concludes mechanisms of physical and chemical processes in addition to the ability of mastering qualitative and quantitative determination.
d.	Solve the scientific problems using different mechanisms and procedures based on critical thinking.
e.	Conduct scientific experiments in chemistry.
f.	Commitment and interest in lifelong learning, and collaborate effectively with other people in a team.
g.	Prepare logical, organized and concise written reports, and oral and poster presentations that effectively communicate chemical content to other scientists.
h.	Commitment to the ethical principles of chemical research.
i.	Find information about chemistry through databases and information
j.	Evaluation of calculations in chemistry experiments and information analysis using computer software.
k.	Demonstrate safety laboratory techniques.

## Responsible Persons and their Signatures:

Course Coordinator	Dr. Abed Abdel Qader	Completed Date	18/ 02 /2020
		Signature	
Received by (Department Head)	Dr. Alaa Mahmoud Al-Ma'abreh	Received Date	19/ 02 /2020

Signature	
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