



**ASU**  
جامعة العلوم التطبيقية الخاصة  
APPLIED SCIENCE PRIVATE UNIVERSITY

AMMAN - JORDAN



المستوى الذهبي

جامعة كل العرب

**Course Syllabus**  
**Faculty of Arts and Science**  
**Academic Department Chemistry**  
**Academic Year 2021/2022 Semester: Second**

<b>Course Title:</b>	Instrumental Analysis Lab
<b>Course No.:</b>	1722314
<b>Prerequisite:</b>	1722312
<b>Concurrent:</b>	.....
<b>Department :</b>	Chemistry
<b>Coordinator :</b>	Dr. Waed Alahmad
<b>Mode of Instruction</b>	On-Campus Learning 3 hours in-class (Synonym) learning

**\* Instructor:**

Lecturer	Office Phone	Room No.	Office Hours	E-mail
<i>Dr. Waed Alahmad</i>	1414	221	9-10 ST 9.30-11 MW	<a href="mailto:W_alahmad@asu.edu.jo">W_alahmad@asu.edu.jo</a>

**Course Description**

This course includes experiments covering the following instrumental methods of analysis: UV-VIS spectrophotometry; IR spectroscopy; atomic absorption spectroscopy; flame photometry; gas chromatography; high performance liquid chromatography.



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**Intended Learning Outcomes**

Upon the completion of the course, this module should lead to the following learning outcomes:

**A. Knowledge and Understanding (Student should):**

- A1 Describe the principles of quantitative and qualitative chemical analysis using different instrumental techniques.

**B. Cognitive and Intellectual Skills (Student should):**

- B1 Estimate chemical data by performing calculations related to the concentration by applying the different instrumental.

**C. Subject Specific Skills (Student should):**

- C1 Use of laboratory equipment and standard procedures & safely.  
C2 Prepare scientific reports.

**D. Communication, Information Technology, Numerical:**

- D1 Communication skills, covering both written and oral communication.

**Program Learning Outcomes (PLOs):**

1.1	Describe the fundamentals of chemistry including structure, reactivity and properties of chemical substances, different situation of reaction and the states of matter.
1.2	Construct essential facts, principles and theories across the four principal areas of chemistry, i.e. analytical, organic, inorganic and physical.
2.1	Differentiate between the different states of the matter, elements and compounds based on the recognition and quantification of the properties
2.2	Explain concepts, principles and determine the efficiency of chemical systems by applying mathematical expressions
2.3	Analyze chemical and spectral data to identify and confirm chemical structures as well as determine chemical composition
2.5	Solve the scientific problems using different mechanisms and procedures
3.1	Demonstrate adequate life-long learning skills
3.3	Select appropriate techniques and procedures for chemical synthesis and analysis.
4.3	Interpret data derived from laboratory observations and measurements in terms of their significance and the theory underlying them.
4.4	Employ computational software's and data- processing skills in handling of chemical information and analysis of chemical data



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Course Learning Outcomes Alignment Matrix					
PLO	A1	B1	C1	C2	D1
1.1	√				
1.2	√				
2.3		√			
2.5		√			
3.3			√		
4.3				√	
5.1					√
5.2					√

Course Contents and Schedule

No	Day and Date	Topics to be covered	Method of instruction	CLOs	PLOs
1	Thur. 10/3/2022	Introduction	In-class lecture	A1	1.1 1.2
2	Thur. 17/3/2022	Experiment 1: Spectrophotometric Determination of Iron	In-class lecture	B1, C1, C2, D1	2.3, 2.5, 3.3, 4.3, 5.1, 5.2
3	Thur. 24/3/2022	Experiment 2: Determination of NH <sub>3</sub> -N in water sample	In-class lecture	B1, C1, C2, D1	2.3, 2.5, 3.3, 4.3, 5.1, 5.2
4	Thur. 31/3/2022	Experiment 3: Determination of Ca using Atomic Absorption Spectroscopy (AAS)	In-class lecture	B1, C1, C2, D1	2.3, 2.5, 3.3, 4.3, 5.1, 5.2
5	Thur. 7/4/2022	Experiment 4: Determination of Na using Atomic Absorption Spectroscopy (AAS)	In-class lecture	B1, C1, C2, D1	2.3, 2.5, 3.3, 4.3, 5.1, 5.2
6	Thur. 14/4/2022	Experiment 5: Paper Chromatography	In-class lecture	B1, C1, C2, D1	2.3, 2.5, 3.3, 4.3, 5.1, 5.2
7	Thur. 21/4/2022	Experiment 6: Separation Of the Components of Analgesic Tablets	In-class lecture	B1, C1, C2, D1	2.3, 2.5, 3.3, 4.3, 5.1, 5.2
8.	Midterm Exam				
9	Thur. 5/5/2022	Experiment 7: Analysis by Gas/FID Chromatography	In-class lecture	B1, C1, C2, D1	2.3, 2.5, 3.3, 4.3, 5.1, 5.2
10	Thur. 12/5/2022	Experiment 8: Analysis by Gas/ECD Chromatography	In-class lecture	B1, C1, C2, D1	2.3, 2.5, 3.3, 4.3, 5.1, 5.2
11	Thur. 19/5/2022	Experiment 9: Analysis by Gas/TCD Chromatography	In-class lecture	B1, C1, C2, D1	2.3, 2.5, 3.3, 4.3, 5.1, 5.2
12	Thur. 26/5/2022	Experiment 10: High-performance liquid chromatography (HPLC)	In-class lecture	B1, C1, C2, D1	2.3, 2.5, 3.3, 4.3, 5.1, 5.2
13	Thur. 2/6/2022	Experiment 11: High-performance liquid chromatography (HPLC)	In-class lecture	B1, C1, C2, D1	2.3, 2.5, 3.3, 4.3, 5.1, 5.2
14	Thur. 9/6/2022	Revision	In-class lecture		
15	Thur. 16/6/2022	<b>Final Exam</b>	In-class lecture		

تلفون: 5609999 \_ فاكس: 5232899 \_ عمان – الأردن: Amman – Jordan



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## Grading Plan and Assessment Tools

Assessment Tools	Weights	Due date
Mid-term	30	TBA
Assignments		
Quizzes	15	TBA
Inter active lectures	.....	
Group Work	.....	
Presentation	.....	
Reports	15	TBA
Project	.....	
Case-Study	.....	
Final Exam	40	TBA

## Supplementary Reading

Textbook:

- Instrumental Analysis Laboratory manual, Waed Alahmad, 2022.

## References:

- Douglas A. Skoog, F James Holler and Stanley Crouch (2007) Principles of Instrumental Analysis. 6th Edition or later



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Subject Coordinator      Dr. Waed Alahmad      Signature: -----

Head of Curriculum Committee      Dr. Hussam Miqdad      Signature: -----

Department Head      Dr. Hussam Miqdad      Signature: -----

Faculty Dean      Dr. Hadeel Ali Saed      Signature: -----

Copy to:

- Department Head.
- Head of Curriculum Committee.
- Course File.

Amman – Jordan : عمان – الأردن : Tel: 5609999 \_ فاكس: 5232899 \_

رمز النموذج: UF 28 / 2

رقم القرار 24 / 233

تاريخ الاعتماد 2021/10/18